SAF-B00-030 100 F Area - Full Protocol FINAL DATA PACKAGE

FAX RESULTS TO:	
Mike Stankovich	N/A INITIAL/DATE
VERIFICATION OF CLIENT RECEIPT:	
Phone or CC:Mail to Mike Stankovich	N/A
COMPLETE COPY OF DATA PACKAGE T	O:
Mike Stankovich X9-10	Gd 2/6/03 INITIALDATE
Jeanette Duncan	OF 2/6/03 NITIALDATE
COMMENTS: (PLEASE INCLUDE THE FO SHEET)	OLLOWING ON THE FAX COVER
SDG SAF-B00-0	30
Rad only Chem only X Rad &	& Chem
X Complete Partial	

Waste Site: 116-F-1



Analytical Data Package Prepared For

Bechtel Hanford

Radiochemical Analysis By

STL Richland

2800 G.W. Way, Richland Wa, 99352, (509)-375-3131.

Assigned Laboratory Code: STLRL

Data Package Contains 55 Pages

Report No.: 21671

SDG No.	Order No.	Client Sample ID (List Order)	Lot-Sa No.	Work Order	Report DB ID	Batch No.
W03944	B00-030	J00FL0	J3A090301-1	FFVM61AC	9FFVM610	3010350
		J00FL0	J3A090301-1	FFVM62AF	9FFVM620	3010352
		J00FL0	J3A090301-1	FFVM61AD	9FFVM610	3010354
		J00FL0	J3A090301-1	FFVM61AG	9FFVM610	3010356
		J00FL0	J3A090301-1		9FFVM610	3010358

FEB 2003



CERTIFICATE OF ANALYSIS

Bechtel Hanford, Inc. 3350 George Washington Way Richland, WA 99352

January 31, 2003

Attention: Joan Kessner

SAF Number

B00-030

Date SDG Closed

January 9, 2003

Number of Samples

One (1)

Sample Type

Soil

SDG Number

W03944

Data Deliverable

21-Day / Summary

I. Introduction

On January 9, 2003, one soil sample was received at STL Richland (STLR) for radiochemical analysis. Upon receipt, the sample was assigned the following laboratory ID numbers to correspond with the Bechtel Hanford, Inc. (BHI) specific ID:

STLR ID# FFVM6 BHI ID#

MATRIX SOIL DATE OF RECEIPT

1/9/03

II. Analytical Results/Methodology

The analytical results for this report are presented by laboratory sample ID. Each set of data includes sample identification information, analytical results and the appropriate associated statistical errors.

The requested analyses were:

Gas Proportional Counting

Total Strontium by method RICH-RC-5006

Liquid Scintillation Counting

Carbon-14 by method RICH-RC-5022 Nickel-63 by method RICH-RC-5069

Gamma Spectroscopy

Gamma Spec by method RICH-RC-5017

Chemical Analyses

Chromium Hex by EPA method 7196A

Bechtel Hanford, Inc. January 31, 2003 Page 2

III. Quality Control

The analytical results for each analysis performed under SDG W03944 include a minimum of one Laboratory Control Sample (LCS), one method (reagent) blank, and one duplicate sample analysis. Any exceptions have been noted in the "Comments" section.

QC and sample results are reported in the same units.

IV. Comments

Gas Proportional Counting

Total Strontium by method RICH-RC-5006:

The LCS, batch blank, sample duplicate (J00FL0), and sample results are within contractual requirements.

Liquid Scintillation Counting

Carbon-14 by method RICH-RC-5022:

The LCS, batch blank, sample duplicate (J00FL0), and sample results are within contractual requirements.

Nickel-63 by method RICH-RC-5069:

The LCS, batch blank, matrix spike (J00FL0), sample duplicate (J00FL0), and sample results are within contractual requirements.

Gamma Spectroscopy

Gamma Spec by method RICH-RC-5017:

The LCS, batch blank, sample duplicate (J00FL0), and sample results are within contractual requirements.

Chemical Analyses

Chromium Hex by EPA method 7196A:

The LCS, batch blank, sample duplicate (J00FL0), matrix spike (J00FL0), color (J00FL0 PbCrO4) spike, and sample results are within contractual requirements.

Bechtel Hanford, Inc. January 31, 2003 Page 3

I certify that this Certificate of Analysis is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager, or a designee as verified by the following signature.

Reviewed and approved:

Barbara M. Gillespie

Project Manager

Drinking Water Method Cross References

	DRINKING WAT	ER ASTM METHOD CROSS REFERENCES
Referenced Method	Isotope(s)	STL Richland's SOP number
EPA 901.1	Cs-134, I-131	RICH-RC-5017
EPA 900.0	Alpha & Beta	RICH-RC-5014
EPA 903.1	Ra-226	RICH-RC-5005
EPA 904.0	Ra-228	RICH-RC-5005
EPA 905.0	Sr89/90	RICH-RC-5006
ASTM D2460	Total Radium	RICH-RC-5027
Standard Method 7500-U-C & ASTM D5174	Uranium	RICH-RC-5058
EPA 906.0	Tritium	RICH-RC-5007
NOTE:		
The Gross Alpha LCS is prepared with Am-2	41 (unless otherwi	ise specified in the case narrative)
The Gross Beta LCS is prepared with Sr/Y-9	0 (unless otherwis	e specified in the case narrative)

Uncertainty Estimation

STL Richland has adopted the internationally accepted approach to estimating uncertainties described in "NIST Technical Note 1297, 1994 Edition". The approach, "Law of Propagation of Errors", involves the identification of all variables in an analytical method which are used to derive a result. These variables are related to the analytical result (R) by some functional relationship, R = constants * f(x,y,z,...). The components (x,y,z) are evaluated to determine their contribution to the overall method uncertainty. The individual component uncertainties (u_i) are then combined using a statistical model that provides the most probable overall uncertainty value. All component uncertainties are categorized as type A, evaluated by statistical methods, or type B, evaluated by other means. Uncertainties not included in the components, such as sample homogeneity, are combined with the component uncertainty as the square root of the sum-of-the-squares of the individual uncertainties. The uncertainty associated with the derived result is the combined uncertainty (u_c) multiplied by the coverage factor (1,2, or 3).

When three or more sample replicates are used to derive the analytical result, the type A uncertainty is the standard deviation of the mean value (S/vn), where S is the standard deviation of the derived results. The type B uncertainties are all other random or non-random components that are not included in the standard deviation.

The derivation of the general "Law of Propagation of Errors" equations and specific example are available on request.

Action Lev
An agreed upon activity level used to trigger some action when the final result is greater than or equal to the Action Level. Often the Action Level is related to the Decision Limit.

Batch
The QC preparation batch number that relates laboratory samples to QC samples that were prepared and analyzed together.

Bias
Defined by the equation (Result/Expected)-1 as defined by ANSI N13.30.

COC No Chain of Custody Number assigned by the Client or STL Richland.

Count Error (#s) Poisson counting statistics of the gross sample count and background. The uncertainty is absolute and in the same units as the result. For Liquid Scintillation Counting (LSC) the batch blank count is the background.

Total Uncert (#s)

u_c_Combined

Uncertainty.

All known uncertainties associated with the preparation and analysis of the sample are propagated to give a measure of the uncertainty associated with the result, u_c the combined uncertainty. The uncertainty is absolute and in the same units as the result.

(#s), Coverage Factor CRDL (RL)

MDC|MDA

Rst/MDC

Rst/TotUcert

Report DB No

Sum Rpt Alpha

Spec Rst(s)

Work Order

RER

SDG

Lc

The coverage factor defines the width of the confidence interval, 1, 2 or 3 standard deviations.

Contractual Required Detection Limit as defined in the Client's Statement Of Work or STL Richland "default" nominal detection limit. Often referred to the reporting level (RL)

Decision Level based on instrument background or blank, adjusted by the Efficiency, Chemical Yield, and Volume associated with the sample. The Type I error probability is approximately 5%. Lc=(1.645 * Sqrt(2*(BkgrndCnt/BkgrndCntMin))*(ConvFct/(Eff*Yld*Abn*Vol) * IngrFct). For LSC methods the batch blank is used as a measure of the background variability. Lc cannot be calculated when the background count

Lot-Sample No The number assigned by the LIMS software to track samples received on the same day for a given client. The sample number is a sequential number assigned to each sample in the Lot.

Detection Level based on instrument background or blank, adjusted by the Efficiency, Chemical Yield, and Volume with a Type I and II error probability of approximately 5%. MDC = (4.65 * Sqrt((BkgrndCnt/BkgrndCntMin)/SCntMin) + 2.71/SCntMin) * (ConvFct/(Eff * Yld * Abn * Vol) * IngrFct). For LSC methods the batch blank is used as a measure of the background variability.

Primary Detector The instrument identifier associated with the analysis of the sample aliquot.

The LIMS software assign test specific identifier.

Ratio U-234/U-238 The U-234 result divided by the U-238 result. The U-234/U-238 ratio for natural uranium in NIST SRM 4321C is 1.038.

Ratio of the Result to the MDC. A value greater than 1 may indicate activity above background at a high level of confidence. Caution should be used when applying this factor and it should be used in concert with the qualifiers associated with the result.

Ratio of the Result to the Total Uncertainty. If the uncertainty has a coverage factor of 2 a value greater than 1 may indicate activity above background at approximately the 95% level of confidence assuming a two-sided confidence interval. Caution should be used when applying this factor and it should be used in concert with the qualifiers associated with the result.

Sample Identifier used by the report system. The number is based upon the first five digits of the Work Order Number.

The equation Replicate Error Ratio = (S-D)/[sqrt(TPUs² + TPUd²)] as defined by ICPT BOA where S is the original sample result, D is the result of the duplicate, TPUs is the total uncertainty of the original sample and TPUd is the total uncertainty of the duplicate sample.

Sample Delivery Group Number assigned by the Client or assigned by STL Richland upon sample receipt.

The sum of the reported alpha spec results for tests derived from the same sample excluding duplicate result where the results are in the same units.

The recovery of the tracer added to the sample such as Pu-242 used to trace a Pu-239/40 method.

STL Richland rptGeneralInfo v3.72

Yield

Date: 03-Feb-03

Sample Results Summary STL Richland STLRL

Ordered by Client Sample ID, Batch No.

Report No.: 21671

SDG No: W03944

Client ID	Work Order Number	Parameter	Result +- Uncertainty (2s)	Qual	Units	Yield	MDCIMDA	RER
J00FL0	FFVM61AC	STRONTIUM	-1.64E-02 +- 5.9E-02	U	pCi/g	75.90%	1.46E-01	<u> </u>
J00FL0	FFVM62AF	CO-60	-2.35E-03 +- 1.3E-02	U	pCi/g		2.14E-02	
		CS-137	6.85E-02 +- 2.1E-02		pCi/g		2.26E-02	
		EU-152	1.95E-01 +- 6.9E-02	U	pCi/g		6.55E-02	
		EU-154	7.06E-03 +- 3.9E-02	U	pCi/g		6.80E-02	
		EU-155	6.08E-02 +- 3.5E-02	U	pCi/g		5.92E-02	
J00FL0	FFVM61AD	NI-63	2.58E+00 +- 5.0E+00	U	pCi/g	87.57%	6.16E+00	
J00FL0	FFVM61AG	C-14	-2.51E-01 +- 3.6E-01	U	pCi/g	100.00%	8.07E-01	
J00FL0	9FFVM610	HEXCHROME	-2.59E-02 +- 0.0E+00	U	mg/kg	N/A	8.00E-02	
JOOFLO DUP	FFVM61AH	STRONTIUM	2.06E-02 +- 6.6E-02	U	pCi/g	76.60%	1.52E-01	0.8
JOOFLO DUP	FFVM62AJ	CO-60	2.20E-02 +- 1.4E-02	U	pCi/g		2.65E-02	2.6
		CS-137	9.07E-02 +- 2.6E-02		pCi/g		2.44E-02	1.3
		EU-152	1.21E-01 +- 5.2E-02	U	pCi/g		7.27E-02	1.7
		EU-154	-5.06E-03 +- 4.8E-02	U	pCi/g		8.08E-02	0.4
		EU-155	7.03E-02 +- 4.1E-02	U	pCi/g		6.95E-02	0.4
JOOFLO DUP	FFVM61AL	NI-63	3.85E+00 +- 5.2E+00	U	pCi/g	86.66%	6.65E+00	0.4
JOOFLO DUP	FFVM61AM	C-14	-2.30E-01 +- 3.6E-01	U	pCi/g	100.00%	8.07E-01	0.1
JOOFLO DUP	FFVM61AR	HEXCHROME	0.00E+00 +- 0.0E+00	U	mg/kg	N/A	8.00E-02	

Number of Results:

18

QC Results Summary STL Richland STLRL

Ordered by QC Type, Batch No.

Report No.: 21671

SDG No.: W03944

Date: 03-Feb-03

QC Type	Work Order Number	Parameter	Result +- Uncertainty (25)	Qual	Units	Yield	Recovery	Bias	MDC MDA
BLANK OC	FFXGH1AA	STRONTIUM	-3.72E-03 +- 5.6E-02	Ų	pCi/g	86.10%			1.35E-01
BLANK QC	FFXHW1AA	CO-60	-1.14E-03 +- 7.6E-03	Ų	pCi/g				1.32E-02
		CS-137	-2.81E-03 +- 8.4E-03	U	pCi/g				1.41E-02
		EU-152	8.29E-03 +- 2.4E-02	U	pCi/g				3.87E-02
		EU-154	-1.76E-02 +- 2.2E-02	U	pCi/g				3.56E-02
		EU-155	9.64E-03 +- 2.8E-02	Ų	pCi/g				4.73E-02
BLANK QC	FFXH31AA	NI-63	-2.65E-01 +- 5.8E+00	U	pCi/g	74.78%			7.60E+00
BLANK QC	FFXH71AA	C-14	1.30E-02 +- 1.5E-01	U	pCi/g	100.00%			3.34E-01
LCS	FFXGH1AC	STRONTIUM	1.07E+00 +- 3.1E-01		pCi/g	83.60%	93.83%	-0.1	1.39E-01
LCS	FFXHW1AC	CS-137	3.44E-01 +- 5.9E-02		pCi/g		119.48%	0.2	3.63E-02
		K-40	2.08E+01 +- 2.7E+00		pCi/g		106.51%	0.1	3.08E-01
		RA-226	1.00E+00 +- 1.6E-01		pCi/g		98.46%	0.0	6.17E-02
		RA-228	2.17E+00 +- 3.2E-01	U	pCi/g		115.74%	0.2	3.00E-01
		U-238DHP	1.38E+00 +- 1.0E+00		pCi/g		131.29%	0.3	1.02E+00
LCS	FFXH31AC	NI-63	5.28E+02 +- 4.7E+01		pCi/g	82.32%	104.46%	0.0	6.57E+00
LCS	FFXH71AC	C-14	7.08E+00 +- 3.9E-01		pCi/g	100.00%	97.12%	0.0	3.34E-01
MATRIX SPI	FFVM61AK	NI-63	5.04E+02 +- 4.5E+01		pCi/g	88.79%	100.14%	0.0	6.12E+00
MATRIX SPI	FFVM61AW	HEXCHROME	3.92E+01 +- 0.0E+00		mg/kg	N/A	84.18%	-0.2	8.00E-02
LCS	FFXJH1AS	HEXCHROME	3.87E+01 +- 0.0E+00		mg/kg	N/A	96.70%	0.0	8.00E-02
BLANK QC	FFXJH1AB	HEXCHROME	6.77E-02 +- 0.0E+00	U	mg/kg	N/A			8.00E-02

Number of Results: 20

^{- (}Result/Expected)-1 as defined by ANSI N13.30.

Date: 03-Feb-03

SAMPLE RESULTS

Lab Name:

Lot-Sample No.:

STL Richland

J3A090301-1

Client Sample ID: J00FL0

SDG:

W03944

21671

Collection Date: 1/8/2003 8:45:00 AM

Received Date:

1/9/2003 2:00:00 PM

COC No.:

Report No. :

B00-030-086

Matrix:

SOIL

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(23)	MDC MDA, Action Lev	Apt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
Batch: 3010350	Work Ord	er: FFV	/M61AC	Report DB II): 9FFVM610)						
STRONTIUM	-1.64E-02	U	5.9E-02	5.9E-02	1.46E-01	pCi/g	75.90%	-0.11	1/16/03 07:56 p		6.02	SRTOT_SEP_PRECIP
						6.76E-02		-0.56			G	GPC31A
Batch: 3010352	Work Ord	er: FFV	/M62AF	Report DB II	D: 9FFVM620							
CO-60	-2.35E-03	U	1.3E-02	1.3E-02	2.14E-02	pCi/g		-0.11	1/28/03 07:51 a		317.6	GAMMA_GS
							5.00E-02	-0.38			g	GER8\$1
CS-137	6.85E-02		2.1E-02	2.1E-02	2.26E-02	pCi/g		(3.)	1/28/03 07:51 a		317.6	GAMMA_GS
							1.00E-01	(6.4)			g	GER8\$1
EU-152	1.95E-01	U	6.9E-02	6.9E-02	6.55E-02	pCi/g		(3.)	1/28/03 07:51 a		317.6	GAMMA_GS
							1.00E-01	<i>(5.7)</i>			g	GER8\$1
EU-154	7.06E-03	U	3.9E-02	3.9E-02	6.80E-02	pCi/g		0.1	1/28/03 07:51 a		317.6	GAMMA_GS
							1.00E-01	0.36			g	GER8\$1
EU-155	6.08E-02	U	3.5E-02	3.5E-02	5.92E-02	pCi/g		(1.)	1/28/03 07:51 a		317.6	GAMMA_GS
							1.00E-01	(3.4)			g	GER8\$1
Batch: 3010354	Work Ord	er: FFV	/M61AD	Report DB II): 9FFVM610)						
NI-63	2.58E+00	U	2.6E+00	5.0E+00	6.16E+00	pCi/g	87.57%	0.42	1/18/03 02:36 a		0.2514	NI63LSC
						3.00E+00	3.00E+01	(1.)			G	LSC4
Batch: 3010356	Work Orde	er: FFV	M61AG	Report DB II	D: 9FFVM610)						
C-14	-2.51E-01	U	3.2E-01	3.6E-01	8.07E-01	pCi/g	100.00%	-0.31	1/14/03 03:06 a		2.071	C14_LSC
						3.88E-01	5.00E+01	-(1.4)			G	LSC6
Batch: 3010358	Work Ord	BT:		Report DB II	D: 9FFVM610)						

STL Richland rptSTLRchSample V3.97 A97

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume. U Qual - Analyzed for, but the result is less than the Mdc/Mda|Total Uncert or gamma scan software did not identify the nuclide.

SAMPLE RESULTS

Date: 03-Feb-03

Lab Name:

STL Richland

SDG:

W03944

Collection Date: 1/8/2003 8:45:00 AM

Lot-Sample No.: J3A090301-1

Report No.:

21671

Received Date:

1/9/2003 2:00:00 PM

Client Sample ID: J00FL0

COC No.:

B00-030-086

Matrix:

SOIL

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2s)	Total Uncert(23)	MDC MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
HEXCHROME	-2.59E-02	U		0.0E+00	8.00E-02	mg/kg	N/A	-0.32 N/A	1/22/03		2.5 G	EPA7196

Number of Results: 9

Date: 03-Feb-03

DUPLICATE RESULTS

Lab Name:

STL Richland

SDG:

W03944

Collection Date: 1/8/2003 8:45:00 AM

Lot-Sample No.: J3A090301-1

Report No.: 21671 **Received Date:**

1/9/2003 2:00:00 PM

Client Sample ID: J00FL0 DUP

COC No.:

B00-030-086

Matrix:

SOIL

Parameter	Result, Orig Rst	Qual	Count Error (25)	Total Uncert(23)	MDC MDA, Action Lev	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
Batch: 3010350	Work Orde	er: FFVM6	1AH	Report DB ID: F	FVM61HR	Orig Sa	DB ID: 9FF\	/M610		_		
STRONTIUM	2.06E-02	U	6.6E-02	6.6E-02	1.52E-01	pCi/g	76.60%	0.14	1/16/03 07:56 p		6.01	SRTOT_SEP_PRECIP
	-1.64E-02	U RER	0.8					0.62			G	GPC31B
Batch: 3010352	Work Orde	er: FFVM6	2AJ	Report DB ID: F	FVM62JR	Orig Sa	DB ID: 9FFV	/M620				
CO-60	2.20E-02	U	1.4E-02	1.4E-02	2.65E-02	pCi/g		0.83	1/28/03 06:09 p		317.6	GAMMA_GS
	-2.35E-03	U RER	2.6			5.00E-02		(3.1)			g	GER7\$1
CS-137	9.07E-02		2.6E-02	2.6E-02	2.44E-02	pCi/g		(3.7)	1/28/03 06:09 p		317.6	GAMMA_GS
	6.85E-02	RER	1.3			1.00E-01		(7.1)			g	GER7\$1
EU-152	1.21E-01	U	5.2E-02	5.2E-02	7.27E-02	pCi/g		(1.7)	1/28/03 06:09 p		317.6	GAMMA_GS
	1.95E-01	U RER	1.7			1.00E-01		(4.7)			g	GER7\$1
EU-154	-5.06E-03	U	4.8E-02	4.8E-02	8.08E-02	pCi/g		-0.06	1/28/03 06:09 p		317.6	GAMMA_GS
	7.06E-03	U RER	0.4			1.00E-01		-0.21			g	GER7\$1
EU-155	7.03E-02	U	4.1E-02	4.1E-02	6.95E-02	pCi/g		(1.)	1/28/03 06:09 p		317.6	GAMMA_GS
	6.08E-02	U RER	0.4			1.00E-01		(3.4)			g	GER7\$1
Batch: 3010354	Work Orde	er: FFVM6	IAL	Report DB ID: F	FVM61LR	Orig Sa	DB ID: 9FFV	/M610				
NI-63	3.85E+00	U	2.8E+00	5.2E+00	6.65E+00	pCi/g	86.66%	0.58	1/18/03 05:59 a		0.2513	NI63LSC
	2.58E+00	U RER	0.4			3.00E+01		(1.5)			G	LSC4
Batch: 3010356	Work Orde	er: FFVM61	IAM	Report DB ID: F	FVM61MR	Orig Sa	DB ID: 9FFV	/M610				
C-14	-2.30E-01	U	3.3E-01	3.6E-01	8.07E-01	pCi/g	100.00%	-0.29	1/14/03 03:48 a		2.07	C14_LSC
	-2.51E-01	U RER	0.1			5.00E+01		-(1.3)			G	LSC6
Batch: 3010358	Work Orde	er:		Report DB ID: F	FVM61AR	Orig Sa	DB ID: 9FFV	/M610				
HEXCHROME	0.00E+00	U		0.0E+00	8.00E-02	mg/kg	N/A	0.	1/22/03		2.5	EPA7196
	-2.59E-02	U RPD	-2.0					N/A			G	

STL Richland rptSTLRchDupV3.

__.

97 A97

- Replicate Error Ratio = (S-D)/[sqrt(sq(TPUs)+sq(TPUd))] as defined by ICPT BOA.

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.

U Qual - Analyzed for, but the result is less than the Mdc/Mda|Total Uncert or gamma scan software did not identify the nuclide.

Date: 03-Feb-03

DUPLICATE RESULTS

Lab Name:

STL Richland

SDG:

W03944

21671

Collection Date: 1/8/2003 8:45:00 AM

Lot-Sample No.: J3A090301-1

Report No.:

Received Date:

1/9/2003 2:00:00 PM

Client Sample ID: J00FL0 DUP

COC No.:

B00-030-086

Matrix:

SOIL

	Result,	·	Count	Total	MDCIMDA,	Rpt Unit,		Rst/MDC.	Analysis.	Total Sa	Aliquot	Analy Method,
Parameter	Orig Rst	Qual	Error (2s)	Uncert(23)	Action Lev	CRDL	Yield	Rst/TotUcert	Prep Date	Size	Size	Primary Detector

Number of Results: 9

Comments:

STL Richland rptSTLRchDupV3. RER - Replicate Error Ratio = (S-D)/[sqrt(sq(TPUs)+sq(TPUd))] as defined by ICPT BOA.

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.

Date: 03-Feb-03

BLANK RESULTS

Lab Name:

STL Richland

SDG:

W03944

Lot-Sample No.: J3A090301-

Report No.: 21671

Matrix: SOIL

Parameter	Result	Qual	Count Error (2s)	Total Uncert(23)	MDC MDA, Lc	Rpt Unit, CROL	Yield	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
Batch: 3010358	Work Order:	:		Report DB ID:	FFXJH1AB	-						
HEXCHROME	6.77E-02	U		0.0E+00	8.00E-02	mg/kg	N/A	0.85	1/22/03		2.5	EPA7196
								N/A			G	···

Number of Results: 1

BLANK RESULTS

Lab Name:

STL Richland

SDG:

W03944

Lot-Sample No.: J3A100000-350

Report No.: 21671

Matrix: SOIL

Date: 03-Feb-03

Parameter	Result	Qual	Count Error (2s)	Total Uncert(23)	MDC MDA, Lc	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
Batch: 3010350	Work Order	: FFXC	H1AA	Report DB ID:	FFXGH1AB							
STRONTIUM	-3.72E-03	U	5.6E-02	5.6E-02	1.35E-01	pCi/g	86.10%	-0.03	1/16/03 07:56 p		6.0	SRTOT_SEP_PRECIP
					6.23E-02			-0.13			G	GPC31C

Number of Results: 1

Comments:

4

BLANK RESULTS

Lab Name:

STL Richland

SDG:

W03944

Lot-Sample No.: J3A100000-352

Report No.: 21671

Matrix: SOIL

Date: 03-Feb-03

Parameter	Result	Qual	Count Error (2s)	Total Uncert(23)	MDC MDA, Lc	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
Batch: 3010352	Work Order	; FFXH	IW1AA	Report DB ID:	FFXHW1AX							······
CO-60	-1.14E-03	U	7.6E-03	7.6E-03	1.32E-02	pCi/g		-0.09	1/16/03 04:48 p		348.0	GAMMA_GS
						5.00E-02		-0.3			g	GER2\$1
CS-137	-2.81E-03	U	8.4E-03	8.4E-03	1.41E-02	pCi/g		-0.2	1/16/03 04:48 p		348.0	GAMMA_GS
						1.00E-01		-0.67			g	GER2\$1
EU-152	8.29E-03	U	2.4E-02	2.4E-02	3.87E-02	pCi/g		0.21	1/16/03 04:48 p		348.0	GAMMA_GS
						1.00E-01		0.69			g	GER2\$1
EU-154	-1.76E-02	U	2.2E-02	2.2E-02	3.56E-02	pCi/g		-0.49	1/16/03 04:48 p		348.0	GAMMA_GS
						1.00E-01		-(1.6)			g	GER2\$1
EU-155	9.64E-03	U	2.8E-02	2.8E-02	4.73E-02	pCi/g		0.2	1/16/03 04:48 p		348.0	GAMMA_GS
						1.00E-01		0.7			g	GER2\$1

Number of Results: 5

BLANK RESULTS

Lab Name:

STL Richland

SDG:

W03944

Lot-Sample No.: J3A100000-354

Report No.: 21671

Matrix: SOIL

Date: 03-Feb-03

Parameter	Result	Qual	Count Error (2s)	Total Uncert(23)	MDC MDA, Lc	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
Batch: 3010354	Work Order	r: FFXH	31AA	Report DB ID:	FFXH31AB				-			
NI-63	-2.65E-01	U	3.1E+00	5.8E+00	7.60E+00	pCi/g	74.78%	-0.03	1/18/03 07:41 a		0.25	NI63LSC
					3.70E+00	3.00E+01		-0.09			G	LSC4

Number of Results: 1

BLANK RESULTS

Lab Name:

STL Richland

SDG:

W03944

Lot-Sample No.: J3A100000-356

Report No.: 21671

Matrix: SOIL

Date: 03-Feb-03

Parameter	Result	Qual	Count Error (2s)	Total Uncert(23)	MDC MDA, Lc	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
Batch: 3010356	Work Order	r: FFXH	171AA	Report DB ID:	FFXH71AB							
C-14	1.30E-02	U	1.4E-01	1.5E-01	3.34E-01	pCi/g	100.00%	0.04	1/14/03 01:42 a		5.0	C14_LSC
					1.61E-01	5.00E+01		0.17			G	LSC6

Number of Results: 1

Date: 03-Feb-03

LCS RESULTS

Lab Name:

STL Richland

SDG:

W03944

Lot-Sample No.: J3A090301-

Report No.: 21671

Matrix: SOIL

Parameter	Result Qual	Count Error (23)	Total Uncert(2s)	MDC MDA	Report Unit	Yield	Expected	Expected Uncert	Recovery, Bias	Analysis, Prep Date	Aliquot Size	Analy Method, Primary Detector
Batch: 3010358	Work Order:		Report DE	ID: FFXJH1AS						***		
HEXCHROME	3.87E+01		0.0E+00	8.00E-02 m	g/kg	N/A	4.00E+01		96.70%	1/22/03	2.5	EPA7196
					Rec Li	imits:			0.0		G	

Number of Results: 1

LCS RESULTS

Lab Name:

STL Richland

SDG:

W03944

Lot-Sample No.: J3A100000-350

Report No.: 21671

Matrix: SOIL

Date: 03-Feb-03

Parameter	Result	Qual E	Count Error (23)	Total Uncert(2s)	MDC MDA	Report Unit	t Yield	Expected	Expected Uncert	Recovery, Bias	Analysis, Prep Date	Aliquot Size	Analy Method, Primary Detector
Batch: 3010350	Work Order	: FFXGH	11AC	Report DB	iD: FFXGH	1CS	· -						
STRONTIUM	1.07E+00	1.	.4E-01	3.1E-01	1.39E-01	pCi/g	83.60%	1.14E+00	2.2E-02	93.83%	1/16/03 07:56 p	6.0	SRTOT_SEP_PRECIP
							Rec Limits:	70.	130.	-0.1		G	GPC31D

Number of Results: 1

Date: 03-Feb-03

LCS RESULTS

Lab Name:

STL Richland

SDG:

W03944

Lot-Sample No.: J3A100000-352

Report No.: 21671

Matrix: SOIL

Parameter	Result Qual	Count Error (23)	Total Uncert(2s)	MDC MDA	Report Unit	Yield	Expected	Expected Uncert	Recovery, Bias	Analysis, Prep Date	Aliquot Size	Analy Method, Primary Detector
Batch: 3010352	Work Order: Fl	XHW1AC	Report DE	ID: FFXHW	1CM							
CS-137	3.44E-01	5.9E-02	5.9E-02	3.63E-02	pCi/g		2.88E-01	1.3E-02	119.48%	1/17/03 07:23 a	200.01	GAMMA_GS
						Rec Limits:	70.	130.	0.2		g	GER7\$1
K-40	2.08E+01	2.7E+00	2.7E+00	3.08E-01	pCi/g		1.95E+01	1.9E+00	106.51%	1/17/03 07:23 a	200.01	GAMMA_GS
						Rec Limits:	70.	130.	0.1		g	GER7\$1
RA-226	1.00E+00	1.6E-01	1.6E-01	6.17E-02	pCi/g		1.02E+00	5.2E-02	98.46%	1/17/03 07:23 a	200.01	GAMMA_GS
						Rec Limits:	70.	130.	0.0		g	GER7\$1
RA-228	2.17E+00 U	3.2E-01	3.2E-01	3.00E-01	pCi/g		1.87E+00	9.6E-02	115.74%	1/17/03 07:23 a	200.01	GAMMA_GS
						Rec Limits:	70.	130.	0.2		g	GER7\$1
U-238DHP	1.38E+00	1.0E+00	1.0E+00	1.02E+00	pCi/g		1.05E+00	5.4E-02	131.29%	1/17/03 07:23 a	200.01	GAMMA_GS
						Rec Limits:			0.3		g	GER7\$1

Number of Results: 5

Date: 03-Feb-03

LCS RESULTS

Lab Name:

STL Richland

SDG:

W03944

Lot-Sample No.: J3A100000-354

Report No.: 21671

Matrix: SOIL

Parameter	Result	Qual	Count Error (23)	Total Uncert(2s)	MDC MDA	Report Unit	Yield	Expected	Expected Uncert	Recovery, Bias	Analysis, Prep Date	Aliquot Size	Analy Method, Primary Detector
Batch: 3010354	Work Orde	er: FFX	(H31AC	Report DE	ID: FFXH31CS								
NI-63	5.28E+02		9.1E+00	4.7E+01	6.57E+00 pC	i/g	82.32%	5.05E+02	1.7E+01	104.46%	1/18/03 09:23 a	0.25	NI63LSC
						1	Rec Limits:	70.	130.	0.0		G	LSC4

Number of Results: 1

Date: 03-Feb-03

LCS RESULTS

Lab Name:

STL Richland

SDG:

W03944

Lot-Sample No.: J3A100000-356

Report No.: 21671

Matrix: SOIL

Parameter	Result	Qual	Count Error (23)	Total Uncert(2s)	MDCJMDA	Report Unit	Yield	Expected	Expected Uncert	Recovery, Bias	Analysis, Prep Date	Aliquot Size	Analy Method, Primary Detector
Batch: 3010356	Work Orde	er: FFX	H71AC	Report DB	ID: FFXH71	ics							
C-14	7.08E+00		3.0E-01	3.9E-01	3.34E-01	pCi/g	100.00%	7.29E+00	2.4E-01	97.12%	1/14/03 02:24 a	5.0	C14_LSC
							Rec Limits:	70.	130.	0.0		G	LSC6

Number of Results: 1

Comments:

Bias

MATRIX SPIKE RESULTS

Date: 03-Feb-03

Lab Name:

STL Richland

SDG:

W03944

Lot-Sample No.: J3A090301-1

Report No.: 21671

Matrix: SOIL

Parameter	SpikeResult, Orig Rst	Qual	Count Error (2 s)	Total Uncert(2s)	MDC MDA	Rpt Un CRDI	,	Rec-overy	Exp-ected	Exp Uncert	Analysis, Prep Date	Aliquot Size	Analy Method, Primary Detector
Batch: 3010354	Work Order:	FFVM	61AK	Report DB ID:	FFVM61KW		Orig Sa DB ID:	9FFVM610)				
NI-63	5.04E+02		8.6E+00	4.5E+01	6.12E+00	pCi/g	88.79%	100.14%	5.03E+02	1.7E+011	I/18/03 04:18 a	0.2513	Nf63LSC
	2.58E+00	REF	3 22.1									G	LSC4
Batch: 3010358	Work Order	:		Report DB ID:	FFVM61AW		Orig Sa DB ID:	9FFVM610)		····		
HEXCHROME	3.92E+01			0.0E+00	8.00E-02	mg/kg	N/A	84.18%	4.66E+01	•	1/22/03	2.5	EPA7196
	-2.59E-02	RPE	2.0									G	

Number of Results: 2

Comments:

RER

Bias



Data Review Checklist RADIOCHEMISTRY First Level Review

Lot Number: J3A090301 Client ID: BHI			
Due Date: \-30 -03			
QC Batch Number: 3010352			
Method Test Parameter: Garage			
Matrix: So.			· · · · · · · · · · · · · · · · · · ·
SDG Number: wo 3944	***		
<u> </u>	· · · · · · · · · · · · · · · · · · ·		
Review Item	Yes (√)	No (√)	N/A (√)
A. COC			
1. Is the ICOC page complete (includes all applicable analysts, dates,			
SOP numbers and revisions)?			
B. QC Batch			
1. Do the Summary/Detailed Reports include a calculated result for			ľ
each sample listed on the QC Batch Sheet?			
2. Are the QC appropriate for the analysis included in the batch?			
3. Is the Analytical Batch Worksheets complete (includes, as			
appropriate, volumes, count times, etc.)?		ļ	
4. Does the Worksheets include a Tracer Vial label for each sample?	<u> </u>	ļ	
C. QC & Samples	_		
1. Is the blank result, yield and MDA within contract limits?		<u> </u>	
2. Is the LCS result, yield and MDA within contract limits?	-		
3. Are the MS/MSD results, yields and MDAs within contract limits?			
4. Are the duplicate results, yields and MDAs within contract limits?			
5. Are the sample yields and MDAs within contract limits?		<u> </u>	
D. Raw Data			
Were results calculated in the correct units?		·	
2. Were analysis volumes entered correctly?		 	
3. Were yields entered correctly?			
4. Were spectra reviewed/meet contractual requirements?		-	
t Wasan many amounts serviced to a constitute	 	1	+
5. Were raw counts reviewed for anomalies?	I .	1	
E. Other		l .	
E. Other I. Are all Nonconformances included and noted? Torical			<u> </u>
E. Other I. Are all Nonconformances included and noted? Z. Are all required forms filled out?	<u></u>		
E. Other I. Are all Nonconformances included and noted? 2. Are all required forms filled out? 3. Was the correct methodology used?	~		
E. Other I. Are all Nonconformances included and noted? C. Are all required forms filled out? B. Was the correct methodology used? JOHN 1988 Was transcription checked?			
E. Other	~		

LS-038A, Rev. 9, 8/02

First Level Review:

. .

Date: 1-29-03



Data Review Checklist RADIOCHEMISTRY Second Level Review

QC Batch Number:	30/0352	

A. Sample Analysis 1. Are the sample yields within acceptance criteria? 2. Is the sample Minimum Detectable Activity < the Contract Detection Limit? 3. Are the correct isotopes reported?	Yes (√)		N/A (1)
1. Are the sample yields within acceptance criteria? 2. Is the sample Minimum Detectable Activity < the Contract Detection Limit? 3. Are the correct isotopes reported?	1		\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \
2. Is the sample Minimum Detectable Activity < the Contract Detection Limit? 3. Are the correct isotopes reported?	1		1
Detection Limit? 3. Are the correct isotopes reported?		1 .	
P. 00 Samular) /		
B. QC Samples		Ţ	
1. Is the Minimum Detectable Activity for the blank result ≤ the		1	1
Contract Detection Limit?		<u> </u>	
2. Does the blank result meet the Contract criteria?			
3. Is the blank result < the Contract Detection Limit?	~	1	
4. Is the blank result > the Contract Detection Limit but the sample			
result < the Contract Detection Limit?			
5. Is the LCS recovery with contract acceptance criteria?	V		
7. Is the LCS Minimum Detectable Activity ≤ the Contract Detection	,		T
Limit?			
8. Do the MS/MSD results and yields meet acceptance criteria?			
9. Do the duplicate sample results and yields meet acceptance			
criteria?		ļ	
C. Other	_	1	
1. Are all Nonconformances included and noted?			1
2. Are all required forms filled out?	<u> </u>		1
3. Was the correct methodology used?	<i></i>		
4. Was transcription checked?	~		
5. Were all calculations checked at a minimum frequency?	<u></u>		
6. Were units checked?			1

Clouseau **Nonconformance Memo**



NCM #: **J07171**

NCM initiated By: Dale OConnell

Date Opened: 01/29/03

Date Closed: N/A

Classification: Anomaly

Status: PMREVIEW

Production Area: Environmental - Prep

Tests: Gamma by GER

Lot #'s (Sample #'s): J3A090301 (1); J3A100000 (352)

QC Batch: 3010352

Nonconformance: Batch Result Out of Limits

Subcategory: Duplicate agreement exceeds acceptance limit

Problem Description / Root Cause

Name

Dale OConnell

Date

Description

01/29/03

Cause unknown.

Insufficient sample to generate a duplicate.

Client requested U-238DHP at lower abundance, therefor erratic recoveries and higher

MDA.

Corrective Action

Name

<u>Date</u>

Corrective Action

Dale OConnell

01/29/03

Recount sample and duplicate, precision within limits.

Precision determination achieved by recounting sample on a different detector.

Report results.

Approval History

<u>Name</u>

Date Approved:

01/29/03

Dale OConnell

Position

Group Leader

Date Printed: 01/29/03





Data Review Checklist RADIOCHEMISTRY First Level Review

Lot Number: J3A090301 Client ID: BHI			·-
Due Date: 1/30/2003			
OC Batch Number: 30/0350	·	······································	
	NTIUM		 _
	4110101		
Matrix:			 _
SDG Number: NA W03944			
Review Item	Yes (√)	No (V)	N/A (1)
A. COC	1 53 (4)	140(4)	IVA(V)
		1	
1. Is the ICOC page complete (includes all applicable analysts, dates,			.
SOP numbers and revisions)?	 /	-}	
B. QC Batch			
1. Do the Summary/Detailed Reports include a calculated result for		f	
each sample listed on the QC Batch Sheet?		<u> </u>	
2. Are the QC appropriate for the analysis included in the batch?		 	
3. Is the Analytical Batch Worksheets complete (includes, as			
appropriate, volumes, count times, etc.)?			
4. Does the Worksheets include a Tracer Vial label for each sample?			<u></u>
C. QC & Samples			1
1. Is the blank result, yield and MDA within contract limits?	/		
2. Is the LCS result, yield and MDA within contract limits?			
3. Are the MS/MSD results, yields and MDAs within contract limits?		1	
4. Are the duplicate results, yields and MDAs within contract limits?			
5. Are the sample yields and MDAs within contract limits?	/		
D. Raw Data			
1: Were results calculated in the correct units?	/		
2. Were analysis volumes entered correctly?	7	<u> </u>	
3. Were yields entered correctly?		+	
4. Were spectra reviewed/meet contractual requirements?	<u> </u>		 /
5. Were raw counts reviewed for anomalies?			
E. Other		 	
Are all Nonconformances included and noted?			
2. Are all required forms filled out?	/	 	
3. Was the correct methodology used?		-	
4. Was transcription checked?			
5. Were all calculations checked at a minimum frequency?			
5. Were an carculations checked at a minimum frequency? 5. Are worksheet entries complete and correct?		 	
5. Are worksneet entries complete and correct?		<u> </u>	
Comments on any "No" response:			
	_ 		
First Level Review: Jam Quescan		Date: _	1-17-03

LS-038A, Rev. 9, 8/02

•



Data Review Checklist RADIOCHEMISTRY Second Level Review

	· ·	
QC Batch Number:	3010350	
OC Datell Pullines.		

1. Are the sample yields within acceptance criteria? 2. Is the sample Minimum Detectable Activity < the Contract Detection Limit? 3. Are the correct isotopes reported? B. QC Samples 1. Is the Minimum Detectable Activity for the blank result ≤ the Contract Detection Limit? 2. Does the blank result meet the Contract criteria? 3. Is the blank result < the Contract Detection Limit? 4. Is the blank result > the Contract Detection Limit but the sample result < the Contract Detection Limit? 5. Is the LCS recovery with contract acceptance criteria? 7. Is the LCS Minimum Detectable Activity ≤ the Contract Detection Limit? 8. Do the MS/MSD results and yields meet acceptance criteria? 9. Do the duplicate sample results and yields meet acceptance criteria? 1. Are all Nonconformances included and noted? 1. Are all required forms filled out? 1. Was the correct methodology used? 1. Was transcription checked? 1. Were all calculations checked at a minimum frequency? 1. Were all calculations checked at a minimum frequency?	A. Sample Analysis 1. Are the sample yields within acceptance criteria? 2. Is the sample Minimum Detectable Activity < the Contract Detection Limit? 3. Are the correct isotopes reported? B. QC Samples 1. Is the Minimum Detectable Activity for the blank result ≤ the Contract Detection Limit? 2. Does the blank result meet the Contract criteria? 3. Is the blank result < the Contract Detection Limit? 4. Is the blank result > the Contract Detection Limit but the sample result < the Contract Detection Limit? 5. Is the LCS recovery with contract acceptance criteria? 7. Is the LCS Minimum Detectable Activity ≤ the Contract Detection Limit? 8. Do the MS/MSD results and yields meet acceptance criteria? 9. Do the duplicate sample results and yields meet acceptance criteria? C. Other 1. Are all Nonconformances included and noted? 2. Are all required forms filled out? 3. Was the correct methodology used? 4. Was transcription checked? 5. Were all calculations checked at a minimum frequency?	· .		
1. Are the sample yields within acceptance criteria? 2. Is the sample Minimum Detectable Activity < the Contract Detection Limit? 3. Are the correct isotopes reported? B. QC Samples 1. Is the Minimum Detectable Activity for the blank result ≤ the Contract Detection Limit? 2. Does the blank result meet the Contract criteria? 3. Is the blank result > the Contract Detection Limit? 4. Is the blank result > the Contract Detection Limit but the sample result < the Contract Detection Limit? 5. Is the LCS recovery with contract acceptance criteria? 7. Is the LCS Minimum Detectable Activity ≤ the Contract Detection Limit? 8. Do the MS/MSD results and yields meet acceptance criteria? 9. Do the duplicate sample results and yields meet acceptance criteria? 9. Do the duplicate sample results and yields meet acceptance criteria? 9. Cother Are all Nonconformances included and noted? 9. Are all required forms filled out? 9. Was the correct methodology used? 9. Was transcription checked? 9. Were all calculations checked at a minimum frequency? 9. Were units checked?	1. Are the sample yields within acceptance criteria? 2. Is the sample Minimum Detectable Activity < the Contract Detection Limit? 3. Are the correct isotopes reported? B. QC Samples 1. Is the Minimum Detectable Activity for the blank result ≤ the Contract Detection Limit? 2. Does the blank result meet the Contract criteria? 3. Is the blank result < the Contract Detection Limit? 4. Is the blank result > the Contract Detection Limit but the sample result < the Contract Detection Limit? 5. Is the LCS recovery with contract acceptance criteria? 7. Is the LCS Minimum Detectable Activity ≤ the Contract Detection Limit? 8. Do the MS/MSD results and yields meet acceptance criteria? 9. Do the duplicate sample results and yields meet acceptance criteria? 1. Are all Nonconformances included and noted? 2. Are all required forms filled out? 3. Was the correct methodology used? 4. Was transcription checked? 5. Were all calculations checked at a minimum frequency?			✓ ×
2. Is the sample Minimum Detectable Activity < the Contract Detection Limit? 3. Are the correct isotopes reported? B. QC Samples 1. Is the Minimum Detectable Activity for the blank result ≤ the Contract Detection Limit? 2. Does the blank result meet the Contract criteria? 3. Is the blank result < the Contract Detection Limit? 4. Is the blank result > the Contract Detection Limit? 5. Is the LCS tecovery with contract acceptance criteria? 7. Is the LCS Minimum Detectable Activity ≤ the Contract Detection Limit? 8. Do the MS/MSD results and yields meet acceptance criteria? 9. Do the duplicate sample results and yields meet acceptance criteria? 9. Other Are all Nonconformances included and noted? 1. Are all required forms filled out? 1. Was the correct methodology used? 1. Was transcription checked? 1. Were units checked? 1. Were units checked? 1. Were units checked?	2. Is the sample Minimum Detectable Activity < the Contract Detection Limit? 3. Are the correct isotopes reported? B. QC Samples 1. Is the Minimum Detectable Activity for the blank result ≤ the Contract Detection Limit? 2. Does the blank result meet the Contract criteria? 3. Is the blank result < the Contract Detection Limit? 4. Is the blank result > the Contract Detection Limit but the sample result < the Contract Detection Limit? 5. Is the LCS recovery with contract acceptance criteria? 7. Is the LCS Minimum Detectable Activity ≤ the Contract Detection Limit? 8. Do the MS/MSD results and yields meet acceptance criteria? 9. Do the duplicate sample results and yields meet acceptance criteria? C. Other 1. Are all Nonconformances included and noted? 2. Are all required forms filled out? 3. Was the correct methodology used? 4. Was transcription checked? 5. Were all calculations checked at a minimum frequency?			✓ ×
B. QC Samples 1. Is the Minimum Detectable Activity for the blank result ≤ the Contract Detection Limit? 2. Does the blank result meet the Contract criteria? 3. Is the blank result < the Contract Detection Limit? 4. Is the blank result > the Contract Detection Limit? 5. Is the LCS recovery with contract acceptance criteria? 7. Is the LCS Minimum Detectable Activity ≤ the Contract Detection Limit? 8. Do the MS/MSD results and yields meet acceptance criteria? 9. Do the duplicate sample results and yields meet acceptance criteria? 1. Are all Nonconformances included and noted? 1. Are all required forms filled out? 1. Was the correct methodology used? 2. Was transcription checked? 3. Were units checked?	B. QC Samples 1. Is the Minimum Detectable Activity for the blank result ≤ the Contract Detection Limit? 2. Does the blank result meet the Contract criteria? 3. Is the blank result < the Contract Detection Limit? 4. Is the blank result > the Contract Detection Limit but the sample result < the Contract Detection Limit? 5. Is the LCS recovery with contract acceptance criteria? 7. Is the LCS Minimum Detectable Activity ≤ the Contract Detection Limit? 8. Do the MS/MSD results and yields meet acceptance criteria? 9. Do the duplicate sample results and yields meet acceptance criteria? C. Other 1. Are all Nonconformances included and noted? 2. Are all required forms filled out? 3. Was the correct methodology used? 4. Was transcription checked? 5. Were all calculations checked at a minimum frequency?			✓ ·
B. QC Samples 1. Is the Minimum Detectable Activity for the blank result ≤ the Contract Detection Limit? 2. Does the blank result meet the Contract criteria? 3. Is the blank result < the Contract Detection Limit? 4. Is the blank result > the Contract Detection Limit but the sample result < the Contract Detection Limit? 5. Is the LCS recovery with contract acceptance criteria? 7. Is the LCS Minimum Detectable Activity ≤ the Contract Detection Limit? 8. Do the MS/MSD results and yields meet acceptance criteria? 9. Do the duplicate sample results and yields meet acceptance criteria? 1. Other Are all Nonconformances included and noted? 1. Are all required forms filled out? 1. Was the correct methodology used? 1. Was transcription checked? 1. Were all calculations checked at a minimum frequency? 2. Were units checked?	B. QC Samples 1. Is the Minimum Detectable Activity for the blank result ≤ the Contract Detection Limit? 2. Does the blank result meet the Contract criteria? 3. Is the blank result < the Contract Detection Limit? 4. Is the blank result > the Contract Detection Limit but the sample result < the Contract Detection Limit? 5. Is the LCS recovery with contract acceptance criteria? 7. Is the LCS Minimum Detectable Activity ≤ the Contract Detection Limit? 8. Do the MS/MSD results and yields meet acceptance criteria? 9. Do the duplicate sample results and yields meet acceptance criteria? C. Other 1. Are all Nonconformances included and noted? 2. Are all required forms filled out? 3. Was the correct methodology used? 4. Was transcription checked? 5. Were all calculations checked at a minimum frequency?			✓ ·
1. Is the Minimum Detectable Activity for the blank result ≤ the Contract Detection Limit? 2. Does the blank result meet the Contract criteria? 3. Is the blank result ≤ the Contract Detection Limit? 4. Is the blank result > the Contract Detection Limit but the sample result < the Contract Detection Limit? 5. Is the LCS recovery with contract acceptance criteria? 7. Is the LCS Minimum Detectable Activity ≤ the Contract Detection Limit? 8. Do the MS/MSD results and yields meet acceptance criteria? 9. Do the duplicate sample results and yields meet acceptance criteria? 1. Are all Nonconformances included and noted? 1. Are all required forms filled out? 1. Was the correct methodology used? 1. Was transcription checked? 1. Were all calculations checked at a minimum frequency? 1. Were units checked?	 Is the Minimum Detectable Activity for the blank result ≤ the Contract Detection Limit? Does the blank result meet the Contract criteria? Is the blank result > the Contract Detection Limit? Is the blank result > the Contract Detection Limit but the sample result < the Contract Detection Limit? Is the LCS recovery with contract acceptance criteria? Is the LCS Minimum Detectable Activity ≤ the Contract Detection Limit? Do the MS/MSD results and yields meet acceptance criteria? Do the duplicate sample results and yields meet acceptance criteria? Other Are all Nonconformances included and noted? Are all required forms filled out? Was the correct methodology used? Was transcription checked? Were all calculations checked at a minimum frequency? 			✓ ·
Contract Detection Limit? 2. Does the blank result meet the Contract criteria? 3. Is the blank result ≤ the Contract Detection Limit? 4. Is the blank result > the Contract Detection Limit but the sample result < the Contract Detection Limit? 5. Is the LCS recovery with contract acceptance criteria? 7. Is the LCS Minimum Detectable Activity ≤ the Contract Detection Limit? 8. Do the MS/MSD results and yields meet acceptance criteria? 9. Do the duplicate sample results and yields meet acceptance criteria? 1. Other 2. Are all Nonconformances included and noted? 3. Was the correct methodology used? 4. Was transcription checked? 5. Were all calculations checked at a minimum frequency? 6. Were units checked?	2. Does the blank result meet the Contract criteria? 3. Is the blank result > the Contract Detection Limit? 4. Is the blank result > the Contract Detection Limit but the sample result < the Contract Detection Limit? 5. Is the LCS recovery with contract acceptance criteria? 7. Is the LCS Minimum Detectable Activity ≤ the Contract Detection Limit? 8. Do the MS/MSD results and yields meet acceptance criteria? 9. Do the duplicate sample results and yields meet acceptance criteria? C. Other 1. Are all Nonconformances included and noted? 2. Are all required forms filled out? 3. Was the correct methodology used? 4. Was transcription checked? 5. Were all calculations checked at a minimum frequency?			✓ ·
2. Does the blank result meet the Contract criteria? 3. Is the blank result < the Contract Detection Limit? 4. Is the blank result > the Contract Detection Limit but the sample result < the Contract Detection Limit? 5. Is the LCS recovery with contract acceptance criteria? 7. Is the LCS Minimum Detectable Activity ≤ the Contract Detection Limit? 8. Do the MS/MSD results and yields meet acceptance criteria? 9. Do the duplicate sample results and yields meet acceptance criteria? 1. Other 1. Are all Nonconformances included and noted? 1. Are all required forms filled out? 1. Was the correct methodology used? 1. Was transcription checked? 1. Were all calculations checked at a minimum frequency? 1. Were units checked?	 Does the blank result meet the Contract criteria? Is the blank result > the Contract Detection Limit? Is the blank result > the Contract Detection Limit but the sample result < the Contract Detection Limit? Is the LCS recovery with contract acceptance criteria? Is the LCS Minimum Detectable Activity ≤ the Contract Detection Limit? Do the MS/MSD results and yields meet acceptance criteria? Do the duplicate sample results and yields meet acceptance criteria? Other Are all Nonconformances included and noted? Are all required forms filled out? Was the correct methodology used? Was transcription checked? Were all calculations checked at a minimum frequency? 			/
3. Is the blank result < the Contract Detection Limit? 4. Is the blank result > the Contract Detection Limit but the sample result < the Contract Detection Limit? 5. Is the LCS recovery with contract acceptance criteria? 7. Is the LCS Minimum Detectable Activity ≤ the Contract Detection Limit? 8. Do the MS/MSD results and yields meet acceptance criteria? 9. Do the duplicate sample results and yields meet acceptance criteria? 1. Other 1. Are all Nonconformances included and noted? 1. Are all required forms filled out? 1. Was the correct methodology used? 1. Was transcription checked? 1. Were all calculations checked at a minimum frequency? 2. Were units checked?	3. Is the blank result < the Contract Detection Limit? 4. Is the blank result > the Contract Detection Limit but the sample result < the Contract Detection Limit? 5. Is the LCS recovery with contract acceptance criteria? 7. Is the LCS Minimum Detectable Activity ≤ the Contract Detection Limit? 8. Do the MS/MSD results and yields meet acceptance criteria? 9. Do the duplicate sample results and yields meet acceptance criteria? C. Other 1. Are all Nonconformances included and noted? 2. Are all required forms filled out? 3. Was the correct methodology used? 4. Was transcription checked? 5. Were all calculations checked at a minimum frequency?	\frac{1}{\sqrt{1}}		✓
4. Is the blank result > the Contract Detection Limit but the sample result < the Contract Detection Limit? 5. Is the LCS recovery with contract acceptance criteria? 7. Is the LCS Minimum Detectable Activity ≤ the Contract Detection Limit? 8. Do the MS/MSD results and yields meet acceptance criteria? 9. Do the duplicate sample results and yields meet acceptance criteria? 1. Other 1. Are all Nonconformances included and noted? 2. Was the correct methodology used? 3. Was transcription checked? 4. Were all calculations checked at a minimum frequency? 5. Were units checked?	4. Is the blank result > the Contract Detection Limit but the sample result < the Contract Detection Limit? 5. Is the LCS recovery with contract acceptance criteria? 7. Is the LCS Minimum Detectable Activity ≤ the Contract Detection Limit? 8. Do the MS/MSD results and yields meet acceptance criteria? 9. Do the duplicate sample results and yields meet acceptance criteria? C. Other 1. Are all Nonconformances included and noted? 2. Are all required forms filled out? 3. Was the correct methodology used? 4. Was transcription checked? 5. Were all calculations checked at a minimum frequency?			/
result < the Contract Detection Limit? 5. Is the LCS recovery with contract acceptance criteria? 7. Is the LCS Minimum Detectable Activity ≤ the Contract Detection Limit? 8. Do the MS/MSD results and yields meet acceptance criteria? 9. Do the duplicate sample results and yields meet acceptance criteria? 10. Other 11. Are all Nonconformances included and noted? 12. Are all required forms filled out? 13. Was the correct methodology used? 14. Was transcription checked? 15. Were all calculations checked at a minimum frequency? 16. Were units checked?	result < the Contract Detection Limit? 5. Is the LCS recovery with contract acceptance criteria? 7. Is the LCS Minimum Detectable Activity ≤ the Contract Detection Limit? 8. Do the MS/MSD results and yields meet acceptance criteria? 9. Do the duplicate sample results and yields meet acceptance criteria? C. Other 1. Are all Nonconformances included and noted? 2. Are all required forms filled out? 3. Was the correct methodology used? 4. Was transcription checked? 5. Were all calculations checked at a minimum frequency?	<i>✓</i>		\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \
S. Is the LCS recovery with contract acceptance criteria? 7. Is the LCS Minimum Detectable Activity ≤ the Contract Detection Limit? 8. Do the MS/MSD results and yields meet acceptance criteria? 9. Do the duplicate sample results and yields meet acceptance criteria? 1. Other 1. Are all Nonconformances included and noted? 1. Are all required forms filled out? 1. Was the correct methodology used? 1. Was transcription checked? 1. Were all calculations checked at a minimum frequency? 1. Were units checked?	5. Is the LCS recovery with contract acceptance criteria? 7. Is the LCS Minimum Detectable Activity ≤ the Contract Detection Limit? 8. Do the MS/MSD results and yields meet acceptance criteria? 9. Do the duplicate sample results and yields meet acceptance criteria? C. Other 1. Are all Nonconformances included and noted? 2. Are all required forms filled out? 3. Was the correct methodology used? 4. Was transcription checked? 5. Were all calculations checked at a minimum frequency?	<i>S</i>		+
7. Is the LCS Minimum Detectable Activity ≤ the Contract Detection Limit? 8. Do the MS/MSD results and yields meet acceptance criteria? 9. Do the duplicate sample results and yields meet acceptance criteria? 1. Other 1. Are all Nonconformances included and noted? 1. Are all required forms filled out? 1. Was the correct methodology used? 1. Was transcription checked? 1. Were all calculations checked at a minimum frequency? 2. Were units checked?	7. Is the LCS Minimum Detectable Activity ≤ the Contract Detection Limit? 8. Do the MS/MSD results and yields meet acceptance criteria? 9. Do the duplicate sample results and yields meet acceptance criteria? C. Other 1. Are all Nonconformances included and noted? 2. Are all required forms filled out? 3. Was the correct methodology used? 4. Was transcription checked? 5. Were all calculations checked at a minimum frequency?			}
Limit? B. Do the MS/MSD results and yields meet acceptance criteria? D. Do the duplicate sample results and yields meet acceptance criteria? C. Other Are all Nonconformances included and noted? Are all required forms filled out? Was the correct methodology used? Was transcription checked? Were all calculations checked at a minimum frequency? Were units checked?	Limit? 8. Do the MS/MSD results and yields meet acceptance criteria? 9. Do the duplicate sample results and yields meet acceptance criteria? C. Other 1. Are all Nonconformances included and noted? 2. Are all required forms filled out? 3. Was the correct methodology used? 4. Was transcription checked? 5. Were all calculations checked at a minimum frequency?			
B. Do the MS/MSD results and yields meet acceptance criteria? D. Do the duplicate sample results and yields meet acceptance criteria? C. Other Are all Nonconformances included and noted? Are all required forms filled out? Was the correct methodology used? Was transcription checked? Were all calculations checked at a minimum frequency? Were units checked?	8. Do the MS/MSD results and yields meet acceptance criteria? 9. Do the duplicate sample results and yields meet acceptance criteria? C. Other 1. Are all Nonconformances included and noted?			
Do the duplicate sample results and yields meet acceptance criteria? C. Other Are all Nonconformances included and noted? Are all required forms filled out? Was the correct methodology used? Was transcription checked? Were all calculations checked at a minimum frequency? Were units checked?	9. Do the duplicate sample results and yields meet acceptance criteria? C. Other 1. Are all Nonconformances included and noted? 2. Are all required forms filled out? 3. Was the correct methodology used? 4. Was transcription checked? 5. Were all calculations checked at a minimum frequency?		<u> </u>	
criteria? C. Other Are all Nonconformances included and noted? Are all required forms filled out? Was the correct methodology used? Was transcription checked? Were all calculations checked at a minimum frequency? Were units checked?	criteria? C. Other 1. Are all Nonconformances included and noted? 2. Are all required forms filled out? 3. Was the correct methodology used? 4. Was transcription checked? 5. Were all calculations checked at a minimum frequency?			<u> </u>
C. Other Are all Nonconformances included and noted? Are all required forms filled out? Was the correct methodology used? Was transcription checked? Were all calculations checked at a minimum frequency? Were units checked?	C. Other 1. Are all Nonconformances included and noted? 2. Are all required forms filled out? 3. Was the correct methodology used? 4. Was transcription checked? 5. Were all calculations checked at a minimum frequency?	/		
Are all Nonconformances included and noted? Are all required forms filled out? Was the correct methodology used? Was transcription checked? Were all calculations checked at a minimum frequency? Were units checked?	1. Are all Nonconformances included and noted? 2. Are all required forms filled out? 3. Was the correct methodology used? 4. Was transcription checked? 5. Were all calculations checked at a minimum frequency?		·	·
. Was the correct methodology used? . Was transcription checked? . Were all calculations checked at a minimum frequency? . Were units checked?	2. Are all required forms filled out? 3. Was the correct methodology used? 4. Was transcription checked? 5. Were all calculations checked at a minimum frequency?		1	/
. Was the correct methodology used? . Was transcription checked? . Were all calculations checked at a minimum frequency? . Were units checked?	3. Was the correct methodology used? 4. Was transcription checked? 5. Were all calculations checked at a minimum frequency?		<u> </u>	 '
. Was transcription checked? . Were all calculations checked at a minimum frequency? . Were units checked?	4. Was transcription checked? 5. Were all calculations checked at a minimum frequency?			
. Were all calculations checked at a minimum frequency? . Were units checked?	5. Were all calculations checked at a minimum frequency?		 	
Were units checked?			ļ	
	o. were units checked? [/_		
Comments on any "No" response:			<u> </u>	<u> </u>
Comments on any "No" response:	0 (01.1)			
	Comments on any "No" response:			
			_	
		•		
				
				•



LS-038A, Rev. 9, 8/02

Data Review Checklist RADIOCHEMISTRY

A. COC 1. Is the ICOC page complete (includes all applicable analysts, dates, SOP numbers and revisions)? B. QC Batch 1. Do the Summary/Detailed Reports include a calculated result for each sample listed on the QC Batch Sheet? 2. Are the QC appropriate for the analysis included in the batch? 3. Is the Analytical Batch Worksheets complete (includes, as appropriate, volumes, count times, etc.)? 4. Does the Worksheets include a Tracer Vial label for each sample? C. QC & Samples 1. Is the blank result, yield and MDA within contract limits? 2. Is the LCS result, yield and MDA within contract limits? 3. Are the MS/MSD results, yields and MDAs within contract limits? 4. Are the duplicate results, yields and MDAs within contract limits? 5. Are the sample yields and MDAs within contract limits? 6. Were results calculated in the correct units? 7. Were analysis volumes entered correctly? 8. Were yields entered correctly? 9. Were spectra reviewed/meet contractual requirements? 9. Were raw counts reviewed for anomalies? 10. Other 11. Are all Nonconformances included and noted? 12. Are all required forms filled out?	Client ID: WAL	· · · · · · · · · · · · · · · · · · ·		
Client ID: Due Date: OC Batch Number: Method Test Parameter: Matrix: SDG Number: Review Item A. COC I Is the ICOC page complete (includes all applicable analysts, dates, SOP numbers and revisions)? B. QC Batch Do the Summary/Detailed Reports include a calculated result for each sample listed on the QC Batch Sheet? A. Is the Analytical Batch Worksheets complete (includes, as appropriate, volumes, count times, etc.)? Does the Worksheets include a Tracer Vial label for each sample? Is the LCS result, yield and MDA within contract limits? Are the MS/MSD results, yields and MDAs within contract limits? Are the duplicate results, yields and MDAs within contract limits? Are the sample yields and MDAs within contract limits? Raw Data Were results calculated in the correct units? Were analysis volumes entered correctly? Were spectra reviewed/meet contractual requirements? Were raw counts reviewed for anomalies? Are all Nonconformances included and noted? Are all Nonconformances included and noted? Are all required forms filled out?	Client ID: WAL	·		7
Due Date: OC Batch Number: Method Test Parameter: Matrix: SDG Number: Review Item Review Item Review Item A. COC I. Is the ICOC page complete (includes all applicable analysts, dates, SOP numbers and revisions)? B. QC Batch Do the Summary/Detailed Reports include a calculated result for each sample listed on the QC Batch Sheet? Are the QC appropriate for the analysis included in the batch? I. Is the Analytical Batch Worksheets complete (includes, as appropriate, volumes, count times, etc.)? Does the Worksheets include a Tracer Vial label for each sample? OC & Samples Is the blank result, yield and MDA within contract limits? Are the MS/MSD results, yields and MDAs within contract limits? Are the duplicate results, yields and MDAs within contract limits? Are the sample yields and MDAs within contract limits? Raw Data Were results calculated in the correct units? Were analysis volumes entered correctly? Were spectra reviewed/meet contractual requirements? Were raw counts reviewed for anomalies? Are all Nonconformances included and noted? Are all Nonconformances included and noted? Are all required forms filled out?			·	
Method Test Parameter: Matrix: SDG Number: Review Item Review Item Review Item Yes (\) No (\) N/A A. COC Is the ICOC page complete (includes all applicable analysts, dates, SOP numbers and revisions)? B. QC Batch Do the Summary/Detailed Reports include a calculated result for each sample listed on the QC Batch Sheet? Are the QC appropriate for the analysis included in the batch? Is the Analytical Batch Worksheets complete (includes, as appropriate, volumes, count times, etc.)? Does the Worksheets include a Tracer Vial label for each sample? C. QC & Samples Is the blank result, yield and MDA within contract limits? Are the MS/MSD results, yields and MDAs within contract limits? Are the duplicate results, yields and MDAs within contract limits? Are the sample yields and MDAs within contract limits? Are the sample yields and MDAs within contract limits? Were results calculated in the correct units? Were analysis volumes entered correctly? Were spectra reviewed/meet contractual requirements? Were raw counts reviewed for anomalies? C. Other Are all Nonconformances included and noted? Are all required forms filled out?				
Method Test Parameter: Matrix: SDG Number: Review Item A. COC I. Is the ICOC page complete (includes all applicable analysts, dates, SOP numbers and revisions)? 3. QC Batch Do the Summarry/Detailed Reports include a calculated result for ach sample listed on the QC Batch Sheet? 2. Are the QC appropriate for the analysis included in the batch? 3. Is the Analytical Batch Worksheets complete (includes, as appropriate, volumes, count times, etc.)? 4. Does the Worksheets include a Tracer Vial label for each sample? 5. QC & Samples Is the blank result, yield and MDA within contract limits? Are the MS/MSD results, yields and MDAs within contract limits? Are the duplicate results, yields and MDAs within contract limits? Are the sample yields and MDAs within contract limits? Are the sample yields and MDAs within contract limits? Are the sample yields and MDAs within contract limits? Were results calculated in the correct units? Were analysis volumes entered correctly? Were spectra reviewed/meet contractual requirements? Were raw counts reviewed for anomalies? Are all Nonconformances included and noted? Are all Nonconformances included and noted? Are all lequired forms filled out?		-		
Matrix: SDG Number: Review Item Review Item A. COC Is the ICOC page complete (includes all applicable analysts, dates, GOP numbers and revisions)? 3. QC Batch Do the Summary/Detailed Reports include a calculated result for ach sample listed on the QC Batch Sheet? Are the QC appropriate for the analysis included in the batch? Is the Analytical Batch Worksheets complete (includes, as appropriate, volumes, count times, etc.)? Does the Worksheets include a Tracer Vial label for each sample? QC & Samples Is the blank result, yield and MDA within contract limits? Is the LCS result, yield and MDAs within contract limits? Are the MS/MSD results, yields and MDAs within contract limits? Are the duplicate results, yields and MDAs within contract limits? Are the sample yields and MDAs within contract limits? Were results calculated in the correct units? Were results calculated in the correct units? Were yields entered correctly? Were yields entered correctly? Were spectra reviewed/meet contractual requirements? Were raw counts reviewed for anomalies? Other Are all Nonconformances included and noted? Are all required forms filled out?				
Review Item Revie				
Review Item Revie		411		
Is the ICOC page complete (includes all applicable analysts, dates, OP numbers and revisions)? QC Batch Do the Summary/Detailed Reports include a calculated result for ich sample listed on the QC Batch Sheet? Are the QC appropriate for the analysis included in the batch? Is the Analytical Batch Worksheets complete (includes, as propriate, volumes, count times, etc.)? Does the Worksheets include a Tracer Vial label for each sample? QC & Samples Is the blank result, yield and MDA within contract limits? Are the MS/MSD results, yields and MDAs within contract limits? Are the duplicate results, yields and MDAs within contract limits? Are the sample yields and MDAs within contract limits? Raw Data Were results calculated in the correct units? Were analysis volumes entered correctly? Were yields entered correctly? Were spectra reviewed/meet contractual requirements? Were raw counts reviewed for anomalies? Other Are all Nonconformances included and noted? Are all required forms filled out?	SDG Number: 37	77-		
Is the ICOC page complete (includes all applicable analysts, dates, OP numbers and revisions)? B. QC Batch Do the Summary/Detailed Reports include a calculated result for ach sample listed on the QC Batch Sheet? Are the QC appropriate for the analysis included in the batch? Is the Analytical Batch Worksheets complete (includes, as ppropriate, volumes, count times, etc.)? Does the Worksheets include a Tracer Vial label for each sample? C. QC & Samples Is the blank result, yield and MDA within contract limits? Is the LCS result, yield and MDA within contract limits? Are the MS/MSD results, yields and MDAs within contract limits? Are the duplicate results, yields and MDAs within contract limits? Are the sample yields and MDAs within contract limits? Were results calculated in the correct units? Were analysis volumes entered correctly? Were spectra reviewed/meet contractual requirements? Were raw counts reviewed for anomalies? Other Are all Nonconformances included and noted? Are all required forms filled out?		Yes (√)	No (√)	N/A (√)
SOP numbers and revisions)? 3. QC Batch Do the Summary/Detailed Reports include a calculated result for ach sample listed on the QC Batch Sheet? Are the QC appropriate for the analysis included in the batch? Is the Analytical Batch Worksheets complete (includes, as ppropriate, volumes, count times, etc.)? Does the Worksheets include a Tracer Vial label for each sample? C. QC & Samples Is the blank result, yield and MDA within contract limits? Are the MS/MSD results, yields and MDAs within contract limits? Are the duplicate results, yields and MDAs within contract limits? Are the sample yields and MDAs within contract limits? Were results calculated in the correct units? Were analysis volumes entered correctly? Were spectra reviewed/meet contractual requirements? Were raw counts reviewed for anomalies? Other Are all Nonconformances included and noted? Are all required forms filled out?	A. COC			
B. QC Batch I. Do the Summary/Detailed Reports include a calculated result for each sample listed on the QC Batch Sheet? 2. Are the QC appropriate for the analysis included in the batch? 3. Is the Analytical Batch Worksheets complete (includes, as appropriate, volumes, count times, etc.)? 4. Does the Worksheets include a Tracer Vial label for each sample? 5. QC & Samples 6. Is the blank result, yield and MDA within contract limits? 6. Are the MS/MSD results, yields and MDAs within contract limits? 7. Are the duplicate results, yields and MDAs within contract limits? 8. Are the sample yields and MDAs within contract limits? 9. Are the sample yields and MDAs within contract limits? 9. Raw Data 9. Were results calculated in the correct units? 9. Were analysis volumes entered correctly? 9. Were yields entered correctly? 9. Were spectra reviewed/meet contractual requirements? 9. Were raw counts reviewed for anomalies? 10. Other 11. Are all Nonconformances included and noted? 12. Are all required forms filled out?	1. Is the ICOC page complete (includes all applicable analysts, dates,			•
Do the Summary/Detailed Reports include a calculated result for each sample listed on the QC Batch Sheet? Are the QC appropriate for the analysis included in the batch? Is the Analytical Batch Worksheets complete (includes, as appropriate, volumes, count times, etc.)? Does the Worksheets include a Tracer Vial label for each sample? C. QC & Samples Is the blank result, yield and MDA within contract limits? Is the LCS result, yield and MDA within contract limits? Are the MS/MSD results, yields and MDAs within contract limits? Are the duplicate results, yields and MDAs within contract limits? Are the sample yields and MDAs within contract limits? Were results calculated in the correct units? Were analysis volumes entered correctly? Were yields entered correctly? Were spectra reviewed/meet contractual requirements? Were raw counts reviewed for anomalies? Other Are all Nonconformances included and noted? Are all required forms filled out?	SOP numbers and revisions)?	」 _ ン _		`
ach sample listed on the QC Batch Sheet? Are the QC appropriate for the analysis included in the batch? Is the Analytical Batch Worksheets complete (includes, as ppropriate, volumes, count times, etc.)? Does the Worksheets include a Tracer Vial label for each sample? QC & Samples Is the blank result, yield and MDA within contract limits? Is the LCS result, yield and MDA within contract limits? Are the MS/MSD results, yields and MDAs within contract limits? Are the duplicate results, yields and MDAs within contract limits? Are the sample yields and MDAs within contract limits? Raw Data Were results calculated in the correct units? Were analysis volumes entered correctly? Were yields entered correctly? Were spectra reviewed/meet contractual requirements? Were raw counts reviewed for anomalies? Other Are all Nonconformances included and noted? Are all required forms filled out?	3. QC Batch			
cach sample listed on the QC Batch Sheet? 2. Are the QC appropriate for the analysis included in the batch? 3. Is the Analytical Batch Worksheets complete (includes, as appropriate, volumes, count times, etc.)? 4. Does the Worksheets include a Tracer Vial label for each sample? 5. QC & Samples 6. Is the blank result, yield and MDA within contract limits? 6. Is the LCS result, yield and MDA within contract limits? 6. Are the MS/MSD results, yields and MDAs within contract limits? 6. Are the duplicate results, yields and MDAs within contract limits? 6. Are the sample yields and MDAs within contract limits? 7. Are the sample yields and MDAs within contract limits? 8. Were results calculated in the correct units? 9. Were analysis volumes entered correctly? 9. Were yields entered correctly? 9. Were spectra reviewed/meet contractual requirements? 9. Were raw counts reviewed for anomalies? 10. Other 11. Are all Nonconformances included and noted? 12. Are all required forms filled out?	Do the Summary/Detailed Reports include a calculated result for			
Are the QC appropriate for the analysis included in the batch? Is the Analytical Batch Worksheets complete (includes, as ppropriate, volumes, count times, etc.)? Does the Worksheets include a Tracer Vial label for each sample? QC & Samples Is the blank result, yield and MDA within contract limits? Is the LCS result, yield and MDA within contract limits? Are the MS/MSD results, yields and MDAs within contract limits? Are the duplicate results, yields and MDAs within contract limits? Are the sample yields and MDAs within contract limits? Raw Data Were results calculated in the correct units? Were analysis volumes entered correctly? Were spectra reviewed/meet contractual requirements? Were raw counts reviewed for anomalies? Other Are all Nonconformances included and noted? Are all required forms filled out?			Ì	1
Is the Analytical Batch Worksheets complete (includes, as ppropriate, volumes, count times, etc.)? Does the Worksheets include a Tracer Vial label for each sample? QC & Samples Is the blank result, yield and MDA within contract limits? Is the LCS result, yield and MDA within contract limits? Are the MS/MSD results, yields and MDAs within contract limits? Are the duplicate results, yields and MDAs within contract limits? Are the sample yields and MDAs within contract limits? Raw Data Were results calculated in the correct units? Were analysis volumes entered correctly? Were spectra reviewed/meet contractual requirements? Were raw counts reviewed for anomalies? Other Are all Nonconformances included and noted? Are all required forms filled out?				
ppropriate, volumes, count times, etc.)? Does the Worksheets include a Tracer Vial label for each sample? C. QC & Samples Is the blank result, yield and MDA within contract limits? Is the LCS result, yield and MDA within contract limits? Are the MS/MSD results, yields and MDAs within contract limits? Are the duplicate results, yields and MDAs within contract limits? Are the sample yields and MDAs within contract limits? D. Raw Data Were results calculated in the correct units? Were analysis volumes entered correctly? Were spectra reviewed/meet contractual requirements? Were raw counts reviewed for anomalies? Other Are all Nonconformances included and noted? Are all required forms filled out?				
Does the Worksheets include a Tracer Vial label for each sample? C. QC & Samples Is the blank result, yield and MDA within contract limits? Is the LCS result, yield and MDA within contract limits? Are the MS/MSD results, yields and MDAs within contract limits? Are the duplicate results, yields and MDAs within contract limits? Are the sample yields and MDAs within contract limits? D. Raw Data Were results calculated in the correct units? Were analysis volumes entered correctly? Were yields entered correctly? Were spectra reviewed/meet contractual requirements? Were raw counts reviewed for anomalies? Other Are all Nonconformances included and noted? Are all required forms filled out?			<u> </u>	
Is the blank result, yield and MDA within contract limits? Is the LCS result, yield and MDA within contract limits? Are the MS/MSD results, yields and MDAs within contract limits? Are the duplicate results, yields and MDAs within contract limits? Are the sample yields and MDAs within contract limits? D. Raw Data Were results calculated in the correct units? Were analysis volumes entered correctly? Were yields entered correctly? Were spectra reviewed/meet contractual requirements? Were raw counts reviewed for anomalies? Other Are all Nonconformances included and noted? Are all required forms filled out?	. Does the Worksheets include a Tracer Vial label for each sample?			
Is the LCS result, yield and MDA within contract limits? Are the MS/MSD results, yields and MDAs within contract limits? Are the duplicate results, yields and MDAs within contract limits? Are the sample yields and MDAs within contract limits? D. Raw Data Were results calculated in the correct units? Were analysis volumes entered correctly? Were yields entered correctly? Were spectra reviewed/meet contractual requirements? Were raw counts reviewed for anomalies? Other Are all Nonconformances included and noted? Are all required forms filled out?				
Is the LCS result, yield and MDA within contract limits? Are the MS/MSD results, yields and MDAs within contract limits? Are the duplicate results, yields and MDAs within contract limits? Are the sample yields and MDAs within contract limits? D. Raw Data Were results calculated in the correct units? Were analysis volumes entered correctly? Were yields entered correctly? Were spectra reviewed/meet contractual requirements? Were raw counts reviewed for anomalies? Other Are all Nonconformances included and noted? Are all required forms filled out?	. Is the blank result, yield and MDA within contract limits?		1	
Are the duplicate results, yields and MDAs within contract limits? Are the sample yields and MDAs within contract limits? Raw Data Were results calculated in the correct units? Were analysis volumes entered correctly? Were yields entered correctly? Were spectra reviewed/meet contractual requirements? Were raw counts reviewed for anomalies? Other Are all Nonconformances included and noted? Are all required forms filled out?				
Are the sample yields and MDAs within contract limits? D. Raw Data Were results calculated in the correct units? Were analysis volumes entered correctly? Were yields entered correctly? Were spectra reviewed/meet contractual requirements? Were raw counts reviewed for anomalies? Other Are all Nonconformances included and noted? Are all required forms filled out?	. Are the MS/MSD results, yields and MDAs within contract limits?			
Were analysis volumes entered correctly? Were yields entered correctly? Were spectra reviewed/meet contractual requirements? Were raw counts reviewed for anomalies? Other Are all Nonconformances included and noted? Are all required forms filled out?	Are the duplicate results, yields and MDAs within contract limits?			
Were results calculated in the correct units? Were analysis volumes entered correctly? Were yields entered correctly? Were spectra reviewed/meet contractual requirements? Were raw counts reviewed for anomalies? Other Are all Nonconformances included and noted? Are all required forms filled out?				
Were analysis volumes entered correctly? Were yields entered correctly? Were spectra reviewed/meet contractual requirements? Were raw counts reviewed for anomalies? Other Are all Nonconformances included and noted? Are all required forms filled out?). Raw Data			
Were analysis volumes entered correctly? Were yields entered correctly? Were spectra reviewed/meet contractual requirements? Were raw counts reviewed for anomalies? Other Are all Nonconformances included and noted? Are all required forms filled out?	Were results calculated in the correct units?	/		
Were yields entered correctly? Were spectra reviewed/meet contractual requirements? Were raw counts reviewed for anomalies? Other Are all Nonconformances included and noted? Are all required forms filled out?				
Were spectra reviewed/meet contractual requirements? Were raw counts reviewed for anomalies? Other Are all Nonconformances included and noted? Are all required forms filled out?				
Were raw counts reviewed for anomalies? Other Are all Nonconformances included and noted? Are all required forms filled out?				1
Are all Nonconformances included and noted? Are all required forms filled out?	Were raw counts reviewed for anomalies?			
Are all Nonconformances included and noted? Are all required forms filled out?	. Other			
Are all required forms filled out?	. Are all Nonconformances included and noted?			{
			1	<u> </u>
			 	
				
		 /	1	
4. Was transcription checked? 5. Were all calculations checked at a minimum frequency? 6. Are worksheet entries complete and correct? Comments on any "No" response:	3. Was the correct methodology used? 4. Was transcription checked? 5. Were all calculations checked at a minimum frequency? 6. Are worksheet entries complete and correct?			



Data Review Checklist RADIOCHEMISTRY Second Level Review

QC Batch Number: 3010356			
Review Item	Yes (√)	No (1)	N/A (V)
A. Sample Analysis	,	T	
1. Are the sample yields within acceptance criteria?	-	ł	
2. Is the sample Minimum Detectable Activity < the Contract			
Detection Limit?	/	_	· .
3. Are the correct isotopes reported?			
B. QC Samples			
 Is the Minimum Detectable Activity for the blank result ≤ the 			i
Contract Detection Limit?			
2. Does the blank result meet the Contract criteria?	/		
3. Is the blank result < the Contract Detection Limit?			
4. Is the blank result > the Contract Detection Limit but the sample			
result < the Contract Detection Limit?			
5. Is the LCS recovery with contract acceptance criteria?	<u> </u>		
7. Is the LCS Minimum Detectable Activity ≤ the Contract Detection	,		
Limit?		<u> </u>	<u> </u>
8. Do the MS/MSD results and yields meet acceptance criteria?			
9. Do the duplicate sample results and yields meet acceptance			
enteria?	V		
C. Other			
. Are all Nonconformances included and noted?	<u> </u>	<u> </u>	
2. Are all required forms filled out?			
3. Was the correct methodology used?			
Was transcription checked?			
. Were all calculations checked at a minimum frequency?			
. Were units checked?			<u> </u>
Comments on any "No" response:			
· · · · · · · · · · · · · · · · · · ·			
	•		•
			,
Second Level Review:	•	Date:	1/1/1/10



Data Review Checklist RADIOCHEMISTRY

First Level Review	-		\cap	
1			\mathcal{L}	
Lot Number: (13 A 09 (30) _ R			- 1	
Client ID:				-
Due Date: /3/1/45				
QC Batch Number:		· · · · · · · · · · · · · · · · · · ·		
Method Test Parameter: 54-1126.5				
Matrix: SAZ				
SDG Number: 1 13544		·		
				_
Review Item	Yes (√)	No (√)	N/A (√)]
A. COC				
1. Is the ICOC page complete (includes all applicable analysts, dates,	1	1		1
SOP numbers and revisions)?		ł		
B. QC Batch				ţ
Do the Summary/Detailed Reports include a calculated result for	1	1		ŀ
each sample listed on the QC Batch Sheet?				
2. Are the QC appropriate for the analysis included in the batch?		1.		j
3. Is the Analytical Batch Worksheets complete (includes, as		 	+	1
appropriate, volumes, count times, etc.)?	/			
4. Does the Worksheets include a Tracer Vial label for each sample?		 		
		 		{
C. QC & Samples]]
1. Is the blank result, yield and MDA within contract limits?		 	-	ļ
2. Is the LCS result, yield and MDA within contract limits?				}
3. Are the MS/MSD results, yields and MDAs within contract limits?				
4. Are the duplicate results, yields and MDAs within contract limits?		ļ		Į
5. Are the sample yields and MDAs within contract limits?				
D. Raw Data				
1. Were results calculated in the correct units?	_	1		}
2. Were analysis volumes entered correctly?				
3. Were yields entered correctly?				ļ.
4. Were spectra reviewed/meet contractual requirements?				
5. Were raw counts reviewed for anomalies?				
E. Other				1
1. Are all Nonconformances included and noted?	 	}		
2. Are all required forms filled out?		 		{
3. Was the correct methodology used?		 		
		 		ĺ
4. Was transcription checked?		 		Ì
5. Were all calculations checked at a minimum frequency?	——————————————————————————————————————			ļ
6. Are worksheet entries complete and correct?		 	_ <u> </u>	ļ
	•			
Comments on any "No" response:				
		 -		
			· · · · · · · · · · · · · · · · · · ·	
\bigcirc				
First Level Review: Tom Canonson		Dote:	1-20-0	> '
The think the training			1 00	

LS-038A, Rev. 9, 8/02

Date: 1-20.23



Data Review Checklist RADIOCHEMISTRY Second Level Review

3010354

OC Batch Number:

Review Item	Yes (√)	No (√)	N/A (√)
A. Sample Analysis			
1. Are the sample yields within acceptance criteria?			
2. Is the sample Minimum Detectable Activity < the Contract			
Detection Limit?			
3. Are the correct isotopes reported?	/		
B. QC Samples			\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \
1. Is the Minimum Detectable Activity for the blank result ≤ the		ļ	
Contract Detection Limit?	<u> </u>		<u></u> _
2. Does the blank result meet the Contract criteria?		·	
3. Is the blank result < the Contract Detection Limit?			
4. Is the blank result > the Contract Detection Limit but the sample			
result < the Contract Detection Limit?	<u> </u>		
5. Is the LCS recovery with contract acceptance criteria?			
7. Is the LCS Minimum Detectable Activity ≤ the Contract Detection			
Limit?			
8. Do the MS/MSD results and yields meet acceptance criteria?			
9. Do the duplicate sample results and yields meet acceptance	/	-	
criteria?			
C. Other	ţ		
1. Are all Nonconformances included and noted?			
2. Are all required forms filled out?			I
3. Was the correct methodology used?			
4. Was transcription checked?			<u></u>
5. Were all calculations checked at a minimum frequency?			<u> </u>
6. Were units checked?			
Comments on any "No" response:			

Comments on any "No" response:	
Second Level Review: MMMyM	Date: 1-23-03

SEVERN TRENT SERVICES

Richland Laboratory
Data Review Check List
METALS

Work Order Number(s): WO 3944					
Lab Sample Numbers or SDG: FFVMLe Rotch # 3010358					
Method/Test/Parameter: Hexavalent Chromium RICHWC 5005 Ro					
Review Item	Yes (✓)	No (✓)	N/A (✓)	2 nd Level Review (✓)	
A. Initial Calibration					
Performed at required frequency with required number of levels?	X			/	
2. Correlation coefficient within QC limits?	~				
Initial calibration verification (ICV) analyzed immediately after calibration and results within QC limits?	X				
4. Initial calibration blank(ICB) analyzed immediately after ICV and concentrations of all parameters ≤ reporting limit?	X			/	
B. Continuing Calibration	. "				
1. CCV analyzed at required frequency and all parameters within QC limits?	X				
2. CCB analyzed at required frequency and all results ≤ reporting limit?	X			/	
C. Sample Analysis					
Were any samples with concentrations above the linear range for any parameter diluted and reanalyzed?		X		/	
2. Were all sample holding times met?	X			1	
D. QC Samples					
1. All results for the preparation blank below limits?	X				
2. MS or MS/MSD recoveries within QC limits and %RPD (for MSD) acceptable?	1				
3. LCS percent recovery within QC limits and %RPD (for LCSD) acceptable?	X			/	
4. Analytical spikes within QC limits where applicable?	~			/	
5. ICP only: One serial dilution performed per SDG?			X	/	
6. ICP only: CRDL standard (CRI or CRA) analyzed at required frequency?			X	/	
7. ICP only: Interference check samples (ICSA, ICSAB) and HICAL analyzed at the required frequencies and within QC limits?			X	/	

Cfro 1-22-03

Review Item	Yes (✓)	No (✓)	N/A (√),	2 nd Level Review (✓)
E. Other				
1. Are all nonconformances included and noted?			×	/
2. Is the correct date and time of analysis shown?	X			1
3. Did the analyst sign and date the front page of the analytical run?	大			/
4. Correct methodology used?	X			/
5. Transcriptions checked?	X			/
6. Calculations checked at minimum frequency?	· X			~
7. Units checked?	X			/

Comments on any "No" response:	
	,
Analyst: Second-Level Review:	Date: 1-22-03 Date: 1-24-03

Form No. CG-191, Rev. 3, 12/01

CHAIN OF CUSTODY

W-81000

Bechtel Hanford Inc.	CI	HAIN OF CUST	CODY	//SAI	MPLF	ANALY	YSIS	REOUES1	r	B00	-030-086	Page 1	of 1
Collector Nielson/Stankovich	Compa	nnv Contact c Stankovich	Tele	phone 1 1-7620	٧o.			Project Coordi	nator	Price Code	8L	Data Tu	rnaround
Proiect Designation 100 F Area - Full Protocol	Sampli 116-	ing Location -F-1						SAF No. B00-030	/	Air Quality		21	Days
Ice Chest No. ER(-97-D94	L.	Logbook No. 1535-8			C OA 116F126	Method of Shipment FedEx GoV, V				/EHIC			
Shinned To Severn Trent Incorporated, Richland	Offsite	Property No.	NA			Bill of Lading/Air Bill No.							
POSSIBLE SAMPLE HAZARDS/REMARKS				3							ľ		
Radioactive		Preservation	None	·/	Cool 4C	None	None	e None					
Special Handling and/or Storage		Type of Container	aG	\prod	вG	P	aG						
		No. of Container(s)	1		1	1	1	1					
		Volume	60m		60mL	1000mL	60m1	L 20mL					
SDG SAMPLE ANALYSIS	U	1-30	See item (Special Instructi	# F	Chromium lex - 7196	See item (2) in Special Instructions.	Strontiu 89,90 T Sr; Nickel Carbon-	Fotal 1-63;					
W03944 J3A	091	P301	P ab	,			U# ruu						
L	ple Date	Sample Time					SCA.					F. W. St.	
JOOFKO SOIL MO 7-7-	.3		ΓŁ							T			
JOOFLO FFVMO SOIL 1.6		0845	10		<u> </u>	<u></u>							
			 							<u> </u>	ļ		
			1	_ -								ļ	<u> </u>
CHAIN OF POSSESSION S	ign/Print	Names	<u> </u>		I SDEC	IAL INSTR	UCTIO	NIC .			<u> </u>	<u></u>	Matrix *
Relinquished By/Removed From Date/Time /436 Receiv	red By/Store	ed In Da	te/Time										S=Soil
MILL MSTANGUICK 1.8.3 31		728-1.8.3.	14-	30	ചമാദ			ertrace) (Arsenic, Cl esium-137, Cobalt-60				n-155)	SE=Sediment SO=Solid
Relinguished By/Removed From Date/Time Received 1200 1200	ALDV	idn/R Nielso	ite/Time Xh <i>1-9-</i>	1200 113									SI=Sludge W = Water
Retinquished BY/Ramoved from ERC Date/Time 1400 Const.	ed By/Stare	A Rhinehe	te/Time	14:00 -9-00	,								O=Oil A=Air DS=Drum Solids DL=Drum Liquids
	ed By/Store		te/Time		7		Parco						T=Tissue WI=Wipe L=Liquid
Relinquished By/Removed From Date/Time Received By/Stored In Date/Time				· <u>-</u>	-		reling Ref#	nnel not availabluish samples fro	le to om the 372	8			V=Vegetation X=Other
Relinquished By/Removed From Date/Time Receiv	ed By/Store	ed in Dar	te/Time		1		•	· ,	-I! <u>- I</u> -3	3			
LABORATORY Received By SECTION				Title							Ď	ate/Time	
FINAL SAMPLE Disposal Method DISPOSITION				•		Dispos	ed By	· <u></u>			Ĺ	Date/Time	

ERC Radiological Counting Facility Analysis Report

RCF Number RCF9825

Sample Date & Time

11/6/01

1225

Project ID: 116-F-1

SAF Number: B00-029

Date Analyzed 11/12/01 8:04:

Sample ID: B13DV9

G	Energy	Λn	Цy	sis	

•	82,	,			
Nuclide	A	ctivity (pCi/g	g)	Error (pCi/g)	MDC (pCVg)
Co-60		1.3E+00	+/-	1.6E-01	8.3E-02
Cs-137		1.0E+01	+/-	7.4E-01	8.8E-02
Eu-152		1.7E+01	+/-	9.4E-01	3.3E-01
Eu-154		2.1E+00	+/-	2.9F-01	2.3E-01
Eu-155	<	2.8E-01			2.8E-01
Am-241	<	1.7E-01			1.7E-01

Total GEA (pCV)	3.0E+01	+/-	2.1E+00	 	
	Activity (pCi/g)		Error (pCi/g)	•	
Gross Alpha**	N/R	+/-	N/R		
Gross Beta	N/R	+/-	N/R		

Definitions:

All errors reported at 2 standard deviations.

N/R = no result or analysis not requested. <MDA = Less than detection limit

All GEA results reported as "<" list the Minimum Detectable Concentration (MDC) value for that radionuclide.

Rounding error may result in the reported total GEA activity differing from the sum of the > MDA GEA values in the second significant digit.

For soils and natural samples, the following applies:

The analysis of U-238 is based on the activity of Pa-234m.

The analysis of Np-237 is based on the activity of Pa-233.

U-238day is the activity of Pb-214 and Bi-214, short lived daughter products of U-238. Equilibrium between parent and daughter products probably does not exist in disturbed materials.

Th-232day is the activity of Ac-228, Pb-212, and Ti-208, short lived daughter products of Th-232. Equilibrium between parent and daughter products may not exist in disturbed materials.

Other samples, not containing natural materials, may have inapplicable results for the Th, II, transurances and daughter products. The results must then be balanced for the gross alpha analysis.

**The gross alpha results are not corrected for mass absorbtion

No peaks for this radionuclide were visible above background in the spectrum. The result was reported as less than MDC.

Mike Stankovich

Fax 521-8001

Joan Kessger

372-9487

Report Printed: Tuesday, November 13, 2001



Sample Check-in List

Date/Tir	ne Received: <u>V</u>	1/02@14,00 c	sk.						
Client:_	BHT	sdg #: <u>W03</u>	944 _{na[]} saf	#: BOO-030_NA[]					
Work O	rder Number: <u> </u>	34090301	Chain of Custody #	30-030-086					
Shipping	g Container ID:{	EPC-97-094	Air Bill # N/A						
1.	Custody Seals on	shipping container intact?	N	A[] Yes [] No[]					
2.	Custody Seals da	ited and signed?	N	A[] Yes [] No[]					
3.	Chain of Custody			Yes 🕅 No []					
4.	Cooler temperatu	re: <u>49</u> NA[] 5.V	ermiculite/packing ma	terials is NA[] Wet[]Dry[]					
6.	Number of sample	les in shipping container:	4	,					
7.	Sample holding t	imes exceeded?	N	A Yes [] No []					
8.	Samples have: tape custody seals hazard labels appropriate samples labels								
9.	Samples are: in good conditionbrokenbrokenhave air bubbles(Only for samples requiring head space)								
10.	Sample pH taken	?	NA	NA					
11.		, Sample Collector Listed? ' ion only. No corrective acti		Yes No[]					
12.	Were any anomal	lies identified in sample rec	eipt?	Yes [] No 🔰					
13.	Description of an	omalies (include sample nu	mbers):						
Sample (Custodian:	Optuber Rich 1	a hol Date: 1/9/1	23					
Clie	nt Sample ID	Analysis Requested	Condition	Comments/Action					
Client Inf	ormed on	by	Person contacte	d					
[] No a	ction necessary; pro	ocess as is.							
Project M	lanager		Date						
15-023 9	MI Rev 4								

SEVERN TRENT SERVICES

*** RE-COUNT REQUEST *** DUE DATE 1-30-02

CUSTOMER BH1	فبمناوع
The second secon	
ANALYSIS Camma	
	40
MATRIX Soll	
LOT NUMBER 3 3 A 0 90 30	
SAMPLE DELIVERY GROUP 😀 o 뉰 역식 4	
OLD BATCH NUMBER 3010352	

LAB SAMPLE ID	REASON FOR REQUEST & ANALYSIS COMMENTS
1) FFVM6-1-AF	The way of the second s
2) FFVM6-1-AJ-X	Record to prom Quitiest delater
3)	51-27-03
4)	
(5)	
6)	
7)	
9)	The state of the s
10) ๆ	
<u> 11) - 114 24 25 25 1149 15 27 </u>	
12)	
13)	
14)	a transfer of the second of th
15) 11 (11 11 11 11 11 11 11 11 11 11 11 11	
16)	
17)	
18)	and the second section of the second of
19)	ang pengangan kenalagan di salah pengangan berangan di sebagai pengan pengangan pengangan beberapa berangan be Pengangan pengangan pengangan di apanggan beranggan pengangan pengangan penganggan pengangan beberapa berangga
20)	
5 - 1 - 64 (3 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -	and the first of the contract of the first of the contract of

I/27/03 1:14:23 PM]	· · · · · · · · · · · · · · · · · · ·	Sai	mple Prepara	tion/Ana	lysis	Bai	lance Id:	
127642, BECHTEL H Bechtel Hanford, Inc.	HANFORD, INC.	1		pRC5013/5017				Pipet #:	
	ปราการ		TA Gamma by 51 CLIENT: H.				Sep1 DT/	Tm Tech:	
Report Due: 01/30 Batch: 3010352	SOIL	nCi/a		PM, Quote	· BG2 270	30			
SEQ Batch, Test: None		pCi/g		PM, Quote	. bG2, 270	30	•	Tm Tech:	. '
SEQ Batch, 198t. None	•						Pr	ep Tech:	
Work Order, Lot, Sample DateTime	Total Amt/Unit	Initial Aliquo Amt/Unit	t QC Tracer Prep Date		Dish Size	Ppt or Geometry	Count Detector Time Min Id	Count On Off (24hr) Circle	CR Analyst, Init/Date
FFVM6-1-AF									
3A090301-1-SAMP									
01/08/2003 08:45			AmtRec: LP,2X60G,20M	AL #Containers: 4		Scr Rst:	Alpha: 9.99E+01 pCi/g	Beta: 2.82E+01 pCi/g	<u> </u>
2 FFVM6-1-AJ-X							•		
J3A090301-1-DUP									
01/08/2003 08:45			AmtRec: LP,2X60G,20M	AL #Containers: 4		Scr Rst:	Ałpha: 9.99E+01 pCi/g	Beta: 2.82E+01 pCi/g	, <u> </u>
3 FFVM6-2-AF		*****					1 s/	,	1/2 863
I3A090301-1-SAMP		317-69				5200	600 68	1751	10 5
01/08/2003 08:45			AmtRec: LP,2X60G,20N	AL #Containers: 4		Scr Rst:	Alpha: 9.99E+01 pCi/g	Beta: 2.82E+01 pCi/g	
4 FFVM6-2-AJ-X	·						/ ~	199	
J3A090301-1-DUP		317-6		********************************	+	5200	600 97	0409	1/28/2005/1
01/08/2003 08:45			AmtRec: LP,2X60G,20M	ML #Containers: 4		Scr Rst:	Alpha: 9.99E+01 pCi/g	Beta: 2.82E+01 pCi/g	<u> </u>
FFXHW-1-AA-BX									
3A100000-352-MBLK									
01/08/2003 08:45			AmtRec:	#Containers: 1		Scr Rst:	Alpha:	Beta:	
5 FFXHW-1-AC-CM									
J3A100000-352-MLCS									
01/08/2003 08:45			AmtRec:	#Containers: 1		Scr Rst:	Alpha:	Beta:	
Rec	مه جدد سده	1 defere	a Sarator	+L703					
STL Richland	Key: In - Initial Am			d Added Pag	no 1				WO Cnt: 6
Richland Wa.	r - Reference	date, ec-Enrichm	ent Cell, ct-Cocktaile	ed Added rag	,				ICOC v4.5.3.2

1/27/03 1:14:	:24 PM			Sar	nple Prepar	ation/Ana	lysis	Balance Id:					
				AX Gamma Pri TA Gamma by						Pipet #:			
Report Due:	: 01/30/2003			51 CLIENT: HA					Sep1 DT/T	m Tech:			
Batch: 3010	352		pCi/g		<u></u>			 -	Sep2 DT/T	m Tech:			
SEQ Batch, Tes	st: None								·	p Tech:			
Work Order, Sample Date		nit	Initial Aliquot Amt/Unit	QC Tracer Prep Date	QC Vial 2 Prep Date	Dish Size	Ppt or Geometry 1	Count Time Min	Detector Id	Count On Off (24hr) Circle	CR Analyst, Init/Date		
Comments:	·							<u>"</u>			."		
All Clients													
	BECHTEL HANFORD,			Bechtel	Hanford, Inc.	. ,	BG2, 27038						
	P Constituent Li												
Co-60 Cs-137DA	RDL:5.00E-02 RDL:1.00E-01	pCi/g pCi/g	LCL:	UCL:	RPD:20 RPD:20	Cs-137	RDL:1.00E-01	pCi/g	LCL:	UCL:	RPD:20		
Eu-154	RDL:1.00E-01	pCi/g	LCL:	UCL:	RPD:20	Eu-152 Eu-155	RDL:1.00E-01 RDL:1.00E-01	pCi/g pCi/g	LCL: LCL:	UCL: UCL:	RPD:20 RPD:20		
FFXHW1AA-MBL	F.												
Co-60	RDL:5.00E-02	pCi/g	LCL:	UCL:	RPD:20	Cs-137	RDL:1.00E-01	pCi/g	LCL:	UCL:	RPD:20		
Cs-137DA	RDL:1.00E-01	pCi/g	LCL:	UCL:	RPD:20	Eu-152	RDL:1.00E-01	pCi/g	LCL:	UCL:	RPD:20 RPD:20		
Eu-154	RDL:1.00E-01	pCi/g	LCL:	UCL:	RPD:20	Eu-155	RDL:1.00E-01	pCi/g	LCL:	UCL:	RPD:20		
FFXHW1AC-MLCS	5 :						•						
Cs-137	RDL:0.1	pCi/g	LCL:70	UCL:130	RPD:35	Cs-137DA	RDL:0.1	pCi/g	LCL:70	UCL:130	RPD:35		
K-40	RDL:	pCi/g	LCL:70	UCL:130	RPD:35	Ra-226	RDL:0.1	pCi/g	LCL:70	UCL:130	RPD:35		

RA-228DA

RDL:0.2

pCi/g

LCL:70

UCL:130

RPD:35

FFVM61AF-SAMP Calc Info:

RDL:0.2

RDL:

Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B

UCL:130

UCL:130

RPD:35

RPD:35

LCL:70

LCL:70

FFXHW1AA-MBLK:

RA-228

U-238

Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B

FFXHW1AC-MLCS:

Uncert Level (#s): 2 Decay to SaDt: Y Blk Subt:: N Sci.Not.: Y ODRs: B

STL Richland

Key: In - Initial Amt, fi - Final Amt, di - Diluted Amt,

pCi/g

pCi/g

Richland Wa.

r - Reference date, ec-Enrichment Cell, ct-Cocktailed Added

Page 2

WO Cnt: 6 ICOC v4.5.3.2 1/29/03 2:27:59 PM

ICOC Fraction Transfer/Status Report ByDate: 12/30/02, 1/30/03, Batch: '3010352', User: 'All Order by BatchNbr,WorkOrderNbr,DateTimeAccepting

2 Batch Wor	k Ord CurStat	us A	ccepting		Comments
3010352					
4C	CalcC	BELSITOB	1/10/03 3:28:17	7 P M	
SC		WagarR	IsBatched	1/10/03 1:54:45 PM	ICOC_RADCALC v4.5.3.2
SC		BELSITOB	InPrep	1/10/03 3:28:17 PM	RICH-RC-5013 REVISION 4
SC		BELSITOB	InPrep	1/10/03 3:28:21 PM	RICH-RC-5017 REVISION 3
SC		BELSITOB	Prep1C	1/13/03 10:50:31 AM	RICH-RC-5013 REVISION 4
SC		BELSITOB	Prep1C	1/13/03 10:50:35 AM	RICH-RC-5017 REVISION 3
SC		BlackCL	InCnt1	1/13/03 10:53:22 AM	RICH-RD-0007 REVISION 3
SC		DAWKINSO	CalcC	1/19/03 3:07:48 PM	RICH-RD-0007 REVISION 3
\$C		BlackCL	InCnt1	1/27/03 1:45:12 PM	RICH-RD-0007 REVISION 3
SC		BlackCL	CalcC	1/29/03 10:06:10 AM	RICH-RD-0007 REVISION 3
4 <i>C</i>		BELSITOB	1/10/03 3:28:21	I PM	
4C		BELSITOB	1/13/03 10:50:3	31 AM	
4C		BELSITOB	1/13/03 10:50:3	35 AM	
4 <i>C</i>		BlackCL	1/13/03 10:53:2	22 AM	
4 <i>C</i>		DAWKINSO	1/19/03 3:07:48	3 PM	
4 <i>C</i>		BlackCL	1/27/03 1:45:12	2 PM	
4C		BlackCL	1/29/03 10:06:1	IO AM	

Page 1

AC: Accepting Entry; SC: Status Change

STL Richland Richland Wa.

1/10/2003 1:54:50 PM			Sa	ımple Prepara	tion/Ana	alysis			Bal	ance Id: PB	3001-	5
127642, BECHTEL HANFORD, Bechtel Hanford, Inc.	INC.	•	AX Gamma P TA Gamma b	rpRC5013/5017 y HPGE		P	RIO	RITY		Pipet #:	114	
Report Due: 01/30/2003 \	70396	JU.	51 CLIENT: H	IANFORD					Sep1 DT/	Tm Tech:	(
Batch: 3010352 SOIL.	<u> </u>	Ċi/ġ		PM, Quote	: BG2, 27	038			Sep2 DT/	Tm Tech:	7	
SEQ Batch, Test: None		_							•	ep Tech: η	B	
Work Order, Lot, Total Sample DateTime Amt/Ur	- 11	nitial Aliquo Amt/Unit	t QC Trace Prep Date		Dish Size	Ppt o Geom	- 11	Count Time Min	Detector Id	Count On Of (24hr) Circle		CR Analyst, Init/Date
1 FFVM6-1-AF										1/102	119	16/200308
J3A090301-1-SAMP	31	7.6		·····		52	o0	600	G5	1.00	91	/ M/ 200 / 01
01/08/2003 08:45			AmtRec: LP,2X60G,20	ML #Containers: 4		Scr	Rst:	Alpha 9.9	9E+01 pCi/g	Beta: 2.82E+01	pCi/g	
2 FFVM6-1-AJ-X								\	11	ا م		1/18/05
J3A090301-1-DUP	31-	7.6							66		ひ	6
01/08/2003 08:45	•		AmtRec: LP,2X60G,20	ML #Containers: 4		Scr	Ast:	Alpha: 9.9	9E+01 pCi/g	Beta: 2.82E+01	pCi/g	
3 FFXHW-1-AA-BX									r 1	, Vri (1/6/	2003 000
J3A100000-352-MBLK	348. C	<u> </u>	OSBK						G2	0248	<u> </u>	
01/08/2003 08:45			AmtRec:	#Containers: 1		Scr	Rst:	Al	pha:	Beta:	<u>, </u>	
4 FFXHW-1-AC-CM							با		67	ا <i>طاعا</i> د ۱	_	1/18/5>
J3A100000-352-MLCS	200.	0)	CALY	7/		~	∜	₹7		1/17/8/	<u> 123 </u>	
1/1/03 01/08/20 03 08:45			AmtRec:	#Containers: 1			Rst:	Al	pha:	Beta:		
Comments:	Rea	count	dup o	on affece	nt det	techri.	12	2B 11	13/03			
All Clients for Batch:												
127642, BECHTEL HANFORD			Bechte	el Hanford, Inc.	•	BG2, 270	30					
FFVM61AF-SAMP Constituent L: Co-60 RDL:5.00E-02	ist: pCi/g	LCL:	UCL:	RPD:	Cs-137	RDL:1.	00E-0	1 pCi/	g LCL:	UCL:	RPD	:
Eu-152 RDL:1.00E-01	pCi/g	LCL:	UCL:	RPD:	Eu-154	RDL:1.	00E-0	1 pCi/	g LCL:	UCL:	RPD	:
Eu-155 RDL:1.00E-01	pCi/g	LCL:	UCL:	RPD:						•		
FFXHW1AA-MBLK: Co-60 RDL:5.00E-02	pCi/g	LCL:	UCL:	RPD:	Cs-137	RDL:1.			-	UCL:	RPD	
Eu-152 RDL:1.00E-01	pCi/g	LCL:	UCL:	RPD:	Eu-154	RDL:1.	00E-0	1 pci/	g LCL:	UCL:	RPD	1
Eu-155 RDL:1.00E-01 FFXHW1AC-MLCS:	pCi/g	LCL:	UCL:	RPD:								
	nitial Amt fi	Final Amt	di - Diluted Amt,					· · · · · · · · · · · · · · · · · · ·			W	O Cnt: 4
			ent Cell, ct-Cocktail	ed Added Pag	je 1							ICOC v4.5.3.

Richland Wa.

1/	10/	2003	3 1:5	4:51	PM
----	-----	------	-------	------	----

Sample Preparation/Analysis

AX Gamma PrpRC5013/5017 TA Gamma by HPGE PRIORITY

Balance	ld:	
Pinet	#-	

Report Due: 01/30/2003

Batch: 3010352

SEQ Batch, Test: None

5I CLIENT: HANFORD

Sep1 DT/Tm Tech:

Sep2 DT/Tm Tech:

Prep Tech:

Work Order	' '	Total	Initial Aliquot	QC Tracer	QC Vial 2	Dish	Ppt or	Count	Detector	Count On Off	CR Analyst,
Sample Date		Amt/Unit	Amt/Unit	Prep Date	Prep Date	Size	Geometry	Time Min	Id	(24hr) Circle	Init/Date
Cs-137	RDL:0.1	pCi/g	LCL:70	UCL:130	RPD:35	K-40	RDL:	pCi/g	LCL:70	UCL:130	RPD:35
Ra-226	RDL:0.1	pCi/g	LCL:70	UCL:130	RPD:35	RA-228	RDL:0.2	pCi/g	LCL:70	UCL:130	RPD:35
RA-228DA	RDL:0.2	pCi/g	LCL:70	UCL:130	RPD:35	U-238	RDL:	pCi/g	LCL:70	UCL:130	RPD:35

FFVM61AF-SAMP Calc Info:

Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B FFXHW1AA-MBLK: Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt .: N Sci.Not.: Y ODRs: B FFXHW1AC-MLCS: Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B

pCi/g

+ ,--

1/27/03 1:15:27 PM

ICOC Fraction Transfer/Status Report ByDate: 12/28/02, 1/28/03, Batch: '3010352', User: *All Order by BatchNbr,WorkOrderNbr,DateTimeAccepting

Q Batch Work	Ord CurStat	us A	ccepting		Comments
3010352				·	
AC	CalcC	BELSITOB	1/10/03 3:28:17	PM	
SC		WagarR	IsBatched	1/10/03 1:54:45 PM	ICOC_RADCALC v4.5,3.2
SC		BELSITOB	InPrep	1/10/03 3:28:17 PM	RICH-RC-5013 REVISION 4
SC		BELSITOB	InPrep	1/10/03 3:28:21 PM	RICH-RC-5017 REVISION 3
SC		BELSITOB	Prep1C	1/13/03 10:50:31 AM	RICH-RC-5013 REVISION 4
SC		BELSITOB	Prep1C	1/13/03 10:50:35 AM	RICH-RC-5017 REVISION 3
SC		BlackCL	InCnt1	1/13/03 10:53:22 AM	RICH-RD-0007 REVISION 3
SC		DAWKINSO	CalcC	1/19/03 3:07:48 PM	RICH-RD-0007 REVISION 3
4 <i>C</i>		BELSITOB	1/10/03 3:28:21	PM	
4C		BELSITOB	1/13/03 10:50:3	1 AM	
4 <i>C</i>		BELSITOB	1/13/03 10:50:3	5 AM	
4 <i>C</i>		BlackCL	1/13/03 10:53:2	2 AM	
4 <i>C</i>		DAWKINSO	1/19/03 3:07:48	PM	

AC: Accepting Entry; SC: Status Change

STL.Richland

Richland Wa.

1/13/03 12:53:37	РМ			Sa	mple Pi	eparat	ion/Anal	vsis		•	Bala	nce ld:1120373	922 1402, 404
127642, BECHTEL Bechtel Hanford, In		NC.	•	CH Sr-Total P	rpRC5013,	SepRC5		•) ["T"\ /			-
Report Due: 01/3	30/2003 W/C	7294		51 CLIENT: H	•					III R	ep1 DT/Tr	Pipet #: <u>/////</u> n Tech: //////	3 11:50 AM
Batch: 3010350	SOIL		pCi/g		PM	, Quote:	BG2, 270	38		s	ep2 DT/Tr	n Tech: NA	
SEQ Batch, Test: No	ne						•	_		_			ED I
144	11	··· ,. · -						(mg)			Pre	p Tech: ,WAGNI	EHJ
Work Order, Lot, Sample DateTime	Total Amt/Uni		Initial Aliquot Amt/Unit	QC Trace Prep Date		Vial 2 p Date	Dish Size	Ppt or Geometry	Cour Time I		Detector Id	Count On Off (24hr) Circle	CR Analyst, Init/Date
1 FFVM6-1-AC		6	.02g,in	SRTA8552							m (1	2020	du la va
J3A090301-1-SAMP		~~~~		12/06/02 .09/19/02.c				75.9	50	<u> </u>	3/A	n w	4161 costop
01/08/2003 08:45			AmtRec: Lf	,2X60G,20ML	#Containers:	4				Scr Rst:	Alpha: 9	9.99E+01 pCi/g	Beta: 2.82E+01 pCi/g
2 FFVM6-1-AH-X		6.	.01g,in	SRTA8553					Ī		3/B	2020	1/11/2-200
J3A090301-1-DUP				12/06/02 09/19/02 _. r				766		******	ביוג 	2020	1/16/2002010
01/08/2003 08:45			AmtRec: LF	,2X60G,20ML	#Containers:	4				Scr Rst:	Alpha; 9	9.99E+01 pCi/g	Beta: 2.82E+01 pCi/g
3 FFXGH-1-AA-B		6.	.0g,in	SRTA8554				•	- {		310	2 - 2 - 2	1/4 homen
J3A100000-350-BLK				12/06/02 09/19/02.t		*********		86.1			<i></i>	2020	1/16/2002010
01/08/2003 08:45			AmtRec:	#Contr	ainers: 1					Scr Rst:		Alpha:	Beta:
4 FFXGH-1-AC-C		6.	0g,in	STSB0652							3/D	2020	1/4/200
J3A100000-350-LCS				10/03/02 09/19/02,r	*************			83.6			<i></i>		/16/200202
01/08/2003 08:45			AmtRec:	#Conta	ainers: 1				- $$	Scr Rst:		Alpha:	Beta:
Comments:													
All Clients for E 127642, BECHT		INC.	- 	Bechte	l Hanford	, Inc.		BG2, 27038		<u> </u>		<u> </u>	
FFVM61AC-SAMP Con	stituent Li	st:											
sr-90 RDL FFXGH1AA-BLK:	.:1	pCi/g	LCL:70	UCL:130	RPD:35								
Sr-90 RDL FFXGH1AC-LCS:	·:1	pCi/g	LCL:	UCL:	RPD:								
sr-90 RDL FFVM61AC-SAMP Cal		pCi/g	LCL:70	UCL:130	RPD:35								
STL Richland	-			ıted Amt, s1 - Se		2 Page	1						WO Cnt: 4
Richland Wa.	r - Referenc	e date, ec-l	Inrichment Cell	, ct-Cocktailed Ad	ided	. 490	•					· · · · · · · · · · · · · · · · · · ·	Prep_SamplePrep v4.6

1/17/03 2:29:04 PM

ICOC Fraction Transfer/Status Report ByDate: 12/18/02, 1/18/03, Batch: '3010350', User: 'All Order by BatchNbr,WorkOrderNbr,DateTimeAccepting

Q Batch Wor	rk Ord CurStat	tus A	ccepting		Comments
3010350			 		· · · · · · · · · · · · · · · · · · ·
AC	CalcC	BELSITOB	1/10/03 3:28:35	5 PM	
SC		WagarR	IsBatched	1/10/03 1:54:45 PM	ICOC_RADCALC v4.5.3.2
SC		BELSITOB	InPrep	1/10/03 3:28:35 PM	RICH-RC-5013 REVISION 4
SC		BELSITOB	Prep1C	1/13/03 10:50:47 AM	RICH-RC-5013 REVISION 4
SC		WAGNERJ	InPrep2	1/13/03 12:50:56 PM	RICH-RC-5013 REVISION 4
SC		WAGNERJ	Prep2C	1/14/03 9:10:33 AM	RICH-RC-5013 REVISION 4
SC		FABREM	InSep1	1/14/03 2:22:10 PM	RICH-RC-5006 REVISION 4
SC		FABREM	Sep1C	1/16/03 3:20:56 PM	RICH-RC-5006 REVISION 4
SC		DAWKINSO	InCnt1	1/16/03 4:23:01 PM	RICH-RD-0003 REVISION 3
SC		BlackCL	InCnt1	1/17/03 8:46:42 AM	RICH-RD-0003 REVISION 3
SC		BlackCL	CalcC	1/17/03 8:51:00 AM	RICH-RD-0003 REVISION 3
AC		BELSITOB	1/13/03 10:50:4	7 AM	
AC		WAGNERJ	1/13/03 12:50:5	66 PM	
AC		WAGNERJ	1/14/03 9:10:33	3 AM	
AC		FABREM	1/14/03 2:22:10) PM	
AC		FABREM	1/16/03 3:20:56	S PM	
AC		DAWKINSO	1/16/03 4:23:01	PM	
AC .		BlackCL	1/17/03 8:46:42	2 AM	
AC		BlackCL	1/17/03 8:51:00) AM	

AC: Accepting Entry; SC: Status Change

STL Richland Richland Wa.

1/10/2003 1:54:51 PM			Sample Pre	eparation/An	alysis		Ва	slance Id: Ø⊌	29
127642, BECHTEL HAN Bechtel Hanford, Inc. Report Due: 01/30/20		S3 Car	4 Prp/SepRC5022 bon-14 by Liquid S ENT: HANFORD	Scint	PRIORI	TY		Pipet #:	13-03 om
	OIL pCi	/g	PM,	Quote: BG2, 27	7038		Sep2 DT	/Tm Tech:	
SEQ Batch, Test: None	·		·	·			•	rep Tech:	
Work Order, Lot, Sample DateTime	Total Amt/Unit	Initial Aliquot Amt/Unit	QC Tracer Prep Date	QC Vial 2 Prep Date	Count Time Min	Detector Id		int On Off 4hr) Circle	CR Analyst, Init/Date
1 FFVM6-1-AG					· · · · · · · · · · · · · · · · · · ·				
3A090301-1-SAMP									,
01/08/2003 08:45		AmtRec: LP,2	X60G,20ML #Cont	ainers: 4	Scr Rst:	Alpha: 9.99E	+01 pCi/g	Beta: 2.82E+0	01 pCi/g
2 FFVM6-1-AM-X									
J3A090301-1-DUP		,						***************************************	
01/08/2003 08:45		AmtRec: LP,2	X60G,20ML #Conl	ainers: 4	Scr Rst:	Alpha: 9.99E	+01 pCi/g	Beta: 2.82E+0	01 pCi/g
3 FFXH7-1-AA-B									
J3A100000-356-BLK									
01/08/2003 08:45		AmtRec:	#Containers: 1		Scr Rst:	Alpha	ı:	Beta:	÷
4 FFXH7-1-AC-C			-						
J3A100000-356-LCS									
01/08/2003 08:45		AmtRec:	#Containers: 1		Scr Rst:	Alpha	1 :	Beta:	
5 FFXH7-1-AD-BN									
J3A100000-356-IBLK	,					••••••			
01/08/2003 08:45		AmtRec:	#Containers: 1		Scr Rst:	Alpha	ı:	Beta:	
6 FFXH7-1-AE-BN									
J3A100000-356-IBLK									
01/08/2003 08:45		AmtRec:	#Containers: 1		Scr Rst:	Alpha	ı:	Beta:	
STL Richland K Richland Wa.	ey: In - Initial Amt, fi - Fir r - Reference date, ec-			Page 1					WO Cnt: 6 ICOC v

1/10/2003 1:5	54:52 PM
---------------	----------

Sample Preparation/Analysis

5S C-14 Prp/SepRC5022 S3 Carbon-14 by Liquid Scint

51 CLIENT: HANFORD

PRIORITY

Balance Id: 029

Pipet #: _____

Sep1 DT/Tm Tech: 1-13-03 pm

Report Due: 01/30/2003

pCi/g

Sep2 DT/Tm Tech:

Prep Tech:

Work Order, Lot, To	otal Initial Aliquo	QC Tracer	QC Vial 2	Count	Detector	Count On Off	CR Analyst,
Sample DateTime Ami	t/Unit Amt/Unit	Prep Date	Prep Date	Time Min	ld	(24hr) Circle	Init/Date

Comments:

Batch: 3010356

SEQ Batch, Test: None

127642, BECHTE	L HANFORD,	INC.		Bechtel 1	Hanford, Inc.	, BG2, 27038
FFVM61AG-SAMP Cons	tituent List	t:				
C-14 RDL:	50	pCi/g	LCL:70	UCL:130	RPD:35	
FFXH71AA-BLK:						
C-14 RDL:	50	pCi/g	LCL:	UCL:	RPD:	
FFXH71AC-LCS:						
C-14 RDL:	50	pCi/g	LCL:70	UCL:130	RPD:35	
FFXH71AD-IBLK:						
C-14 RDL:	50	pCi/g	LCL:	UCL:	RPD:	
FFXH71AE-IBLK:						
C-14 RDL:	50	pCi/g	LCL:	UCL:	RPD:	
FFVM61AG-SAMP Calc	Info:					
Uncert Level	(#s).: 2	Decay to	SaDt: Y	Blk Subt.:	N Sci.Not.: Y	ODRs: B
FFXH71AA-BLK:						
Uncert Level	(#s).: 2	Decay to	SaDt: Y	Blk Subt.:	N Sci.Not.: Y	ODRs: B
FFXH71AC-LCS:						
Uncert Level	(#s).: 2	Decay to	SaDt: Y	Blk Subt.:	N Sci.Not.: Y	ODR#: B
FFXH71AD-IBLK:						
Uncert Level	(#s).: 2	Decay to	SaDt: Y	Blk Subt.:	N Sci.Not.: Y	ODRs: B
FFXH71AE-IBLK:						
Uncert Level	(#s).: 2	Decay to	SaDt: Y	Blk Subt.:	N Sci.Not.: Y	ODRs: B

r - Reference date, ec-Enrichment Cell, ct-Cocktailed Added

Page 2

WO Cnt: 6 ICOC v4.5.3.2 1/15/03 8:50:33 AM

ICOC Fraction Transfer/Status Report ByDate: 12/16/02, 1/16/03, Batch: '3010356', User: 'All Order by BatchNbr,WorkOrderNbr,DateTimeAccepting

Q Batch Work	k Ord CurStat	us Ad	ccepting		Comments
3010356	<u> </u>				
AC	CalcC	BELSITOB	1/10/03 3:28:40) PM	
SC		WagarR	IsBatched	1/10/03 1:54:45 PM	ICOC_RADCALC v4.5.3.2
SC		BELSITOB	InPrep	1/10/03 3:28:40 PM	RICH-RC-5013 REVISION 4
SC		BELSITOB	Prep1C	1/10/03 3:28:51 PM	RICH-RC-5013 REVISION 4
SC		McDowellD	InSep1	1/13/03 11:14:32 AM	RICH-RC-5022 REVISION 3
SC		McDowellD	Sep1C	1/13/03 2:39:00 PM	RICH-RC-5022 REVISION 3
SC		DAWKINSO	InCnt1	1/13/03 2:53:42 PM	RICH-RD-0001 REVISION 2
sc		BlackCL	CalcC	1/14/03 9:54:42 AM	RICH-RD-0001 REVISION 2
AC		BELSITOB	1/10/03 3:28:51	PM	
AC		McDowellD	1/13/03 11:14:3	32 AM	
AC		McDowellD	1/13/03 2:39:00) PM	
AC		DAWKINSO	1/13/03 2:53:42	2 PM	
AC		BlackCL	1/14/03 9:54:42	2 AM	

AC: Accepting Entry; SC: Status Change

STL Richland

Richland Wa.

1/13/03 1:13:46	PM			Sample Prep	aration/Ana	lysis			Balan	ce ld:1120373	3922 //	4B54-5
127642, BECHTE Bechtel Hanford, I		•		PrpRC5013/5019,	•	PR	IOR	ITY	, P	ipet #:		иA
Report Due: 01		Zauu		el by ICP and Nicke NT: HANFORD	il-63 by Liquia S	cint	- •		p1 DT/Tm	Tech:		
Batch: 3010354	SOIL	pCi/g			uote: BG2, 270	38		_	p2 DT/Tm			
SEQ Batch, Test: N		pong		1 111, 020	10tc. DG2, 270			5e				V
	<u> </u>		(5)						Prep	Tech: ,WAGN	IERJ	
Work Order, Lot, Sample Date	Total Amt /Unit	Total Acidified/Unit	Initial Aliquot Amt/Unit	Adj Aliq Amt (Un-Acidified)	QC Tracer Prep Date	QC Vial 2 Prep Date	Coun Time M	41	Detector Id	Count On ((24hr) Circl		CR Analyst, Init/Date
1 FFVM6-1-AD J3A090301-1-SAMP			0.2514g,in	0.251g	NITA1165 12/17/02		100	<u> </u>				
01/08/2003 08:45		Amt	:Rec: LP,2X60G,20ML	L #Containers: 4				Scr Rst:	Alpha: 9.9	99E+01 pCi/g	Beta: 2	82E+01 pCi/g
2 FFVM6-1-AK-S J3A090301-1-MS			0.2513g,in	0.251g	NISA0453 12/17/02			·				
01/08/2003 08:45		Amt	Rec: LP,2X60G,20ML	L #Containers: 4			,	Scr Rst:	Alpha: 9.9	99E+01 pCi/g	Beta: 2	:.82E+01 pCi/g
3 FFVM6-1-AL-X J3A090301-1-DUP			0.2513g,in	0.251g	NITA1166 12/17/02				*****			
01/08/2003 08:45		Amti	Rec: LP,2X60G,20ML	#Containers: 4		·		Scr Rst:	Alpha: 9.9	99E+01 pCi/g	Beta: 2	.82E+01 pCi/g
4 FFXH3-1-AA-B J3A100000-354-BLK			0.25g,in	0.25g	NITA1167 12/17/02							
01/08/2003 08:45		Amti	Rec:	#Containers: 1				Scr Rst:	Al	pha:		Beta:
5 FFXH3-1-AC-C J3A100000-354-LCS			0.25g,in	0.25g	NISA0454 12/17/02							
01/08/2003 08:45		Amti	Rec:	#Containers: 1			,	Scr Rst:	Al	pha:		Beta:
6 FFXH3-1-AD-BN J3A100000-354-IBLF												
01/08/2003 08:45		Amti	Rec:	#Containers: 1			↓	Scr Ast:	At	pha:		Beta:
STL Richland	Key: In - Initial Amt,	fi - Final Amt, d	fi - Diluted Amt, s'	1 - Sep1, s2 - Sep2							W) Cnt: 6
Richland Wa.	•		nt Cell, ct-Cocktail		Page 1							_SamplePrep v4.6

1/13/03	1:13:47	PM

Batch: 3010354

SEQ Batch, Test: None

Sample Preparation/Analysis

AF Ni-63 PrpRC5013/5019, SepRC5069 S4 Nickel by ICP and Nickel-63 by Liquid Scint 5I CLIENT: HANFORD

PRIORI	TV	Pipet #:
PRIORI	Sep1 D1	/Tm Tech:

Pipet #: _

Report Due: 01/30/2003

pCi/g

Sep2 DT/Tm Tech:

Prep Tech:

Balance Id:

Work Order, Lot,	Total Amt	Total	Initial Aliquot	Adj Aliq Amt	QC Tracer	QC Vial 2	Count	Detector	Count On Off	CR Analyst,
Sample Date	/Unit	Acidified/Unit	Amt/Unit	(Un-Acidified)	Prep Date	Prep Date	Time Min	Id	(24hr) Circle	Init/Date
					Ad.,		<u> </u>		18	

Comments:

	s for Batch:							
127642	, BECHTEL HANFORD	, INC.		Bechtel	Hanford,	Inc.	, Σ	IG2, 27038
FFVM61AD-S	AMP Constituent L	lst:		· · · · · · · · · · · · · · · · · · ·		<u></u>		
Ni-63	RDL:30	pCi/g	LCL:70	UCL:130	RPD:35			
FFVM61AK-M	S Constituent List	::						
Ni-63	RDL:30	pCi/g	LCL:70	UCL:130	RPD:35			
FFXH31AA-B	LK:							
Ni-63	RDL:30	pCi/g	LCL:	UCL:	RPD:			
FFXH31AC-L	CS:							
Ni-63	RDL:30	pCi/g	LCL:70	UCL:130	RPD:35			
FFXH31AD-I	BLK:							
Ni-63	RDL:30	pCi/g	LCL:	UCL:	RPD:			
FFUM61an_G	AMP Calc Info:							
	t Level (#s).: 2	Decay to	Sant. V	Blk Subt.:	N Sc	i.Not.: Y	ODRa	
	S Calc Info:	Decay to	Qubt. I	DIA DUDC		1180011. 1	ODRA	
	t Level (#s).: 2	Decay to	Sant: Y	Blk Subt.:	N Sc	i.Not.: Y	ODRs	. В
FFXH31AA-B	· · · · - ·							
	t Level (#s).: 2	Decay to	SaDt: Y	Blk Subt.:	N Sc	i.Not.: Y	ODR	: B
FFXH31AC-L	· · · · · · · · · · · · · · · · · · ·	2000, 00						· -
	t Level (#s).: 2	Decay to	SaDt: Y	Blk Subt.:	n sc	i.Not.: Y	ODRs	: B
FFXH31AD-I	• •							·- -
	t Level (#s).: 2	Decay to	SaDt: Y	Blk Subt.:	N Sc	i.Not.: Y	ODRs	: B
Oncer	- 20101 (#8) 11 2							· -

1/20/03 5:12:29 PM

ICOC Fraction Transfer/Status Report ByDate: 12/21/02, 1/21/03, Batch: '3010354', User: *All Order by BatchNbr,WorkOrderNbr,DateTimeAccepting

Q Batch Work O	rd CurStat	us Ac	cepting		Comments
3010354					
AC	CalcC	ManisD	1/6/03 3:46:58 1	PM	
SC		ManisD	InSep1	1/6/03 3:46:58 PM	RICH-RC-5069 REVISION 4
SC		WagarR	IsBatched	1/10/03 1:54:45 PM	ICOC_RADCALC v4.5.3.2
SC		BELSITOB	InPrep	1/10/03 3:28:30 PM	RICH-RC-5013 REVISION 4
SC		BELSITOB	Prep1C	1/13/03 10:50:42 AM	RICH-RC-5013 REVISION 4
SC		WAGNERJ	InPrep2	1/13/03 12:50:52 PM	RICH-RC-5013 REVISION 4
SC		WAGNERJ	Prep2C	1/14/03 11:15:12 AM	RICH-RC-5013 REVISION 4
SC		ManisD	Sep1C	1/15/03 3:47:18 PM	RICH-RC-5069 REVISION 4
SC		DAWKINSO	InCnt1	1/16/03 1:45:56 PM	RICH-RD-0001 REVISION 2
sc		BlackCL	CalcC	1/20/03 12:50:52 PM	RICH-RD-0001 REVISION 2
4C		BELSITOB	1/10/03 3:28:30) PM	
AC		BELSITOB	1/13/03 10:50:4	12 AM	
AC		WAGNERJ	1/13/03 12:50:5	52 PM	
AC		WAGNERJ	1/14/03 11:15:1	12 AM	
AC		ManisD	1/15/03 3:47:18	3 PM	
AC		DAWKINSO	1/16/03 1:45:56	5 PM	
AC		BlackCL	1/20/03 12:50:5	52 PM	

AC: Accepting Entry; SC: Status Change

STL Richland

Richland Wa.

1/10/2003 1:54:52	PM		Sam	nple Preparat	ion/Analy	/sis		Bal	ance ld:	
127642, BECHTEL I Bechtel Hanford, Inc.			_	estion by method Hexavalent (7196		PRIO	RITY		Pipet #:	
Report Due: 01/30	0/2003 (,)	29UU	51 CLIENT: HA		,		•	Sep1 DT/	Tm Tech:	
Batch: 3010358	SOIL	mg/kg		PM, Quote:	BG2, 2703	8		Sep2 DT/	Tm Tech:	
SEQ Batch, Test: None	9							Pr	ep Tech:	
Work Order, Lot, Sample DateTime	Total Amt/Unit	Initial Aliquot Amt/Unit	QC Tracer Prep Date	QC Vial 2 Prep Date	Dish Size	Ppt or Geometry	Count Time Min	Detector Id	Count On Off (24hr) Circle	CR Analyst, Init/Date
1 FFVM6-1-AA	·							·····		· · · · · · · · · · · · · · · · · · ·
J3A090301-1-SAMP	***********	*****	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~							
01/08/2003 08:45		Arr	itRec: LP,2X60G,20ML	#Containers: 4		Scr Rst:	Alpha: 9.99	E+01 pCi/g	Beta: 2.82E+01 pCi/g	
2 FFVM6-1-AN-S										
J3A090301-1-MS					~~~~~				······································	
01/08/2003 08:45		Ап	tRec: LP,2X60G,20ML	#Containers: 4		Scr Rst:	Alpha: 9.99	E+01 pCi/g	Beta: 2.82E+01 pCi/g	
3 FFVM6-1-AP-X	•									
J3A090301-1-DUP									······	
01/08/2003 08:45		An	tRec: LP,2X60G,20ML	#Containers: 4		Scr Rst:	Alpha: 9.99	E+01 pCi/g	Beta: 2.82E+01 pCi/g	
4 FFVM6-1-AQ-S			- :							
J3A090301-1-MS										***************************************
01/08/2003 08:45		Ап	tRec: LP,2X60G,20ML	#Containers: 4		Scr Rst:	Alpha: 9.99	E+01 pCi/g	Beta: 2.82E+01 pCi/g	:
5 FFXJH-1-AA-B										
J3A100000-358-BLK										•••••
01/08/2003 08:45		An	itRec:	Containers: 1		Scr Rst:	Alp	ha:	Beta:	
6 FFXJH-1-AC-C										
J3A100000-358-LCS										***************************************
01/08/2003 08:45	<u></u> .	An	itRec:	Containers: 1		Scr Ast:	Alp	ha:	Beta:	
							•			
STL Richland	Key In - Initial Ami	, fi - Final Amt, di	- Diluted Amt.	<u> </u>						WO Cnt: 6
Richland Wa.		date, ec-Enrichment		Added Page	<i>:</i> 1					ICOC v4.5.3.2

Richland Wa.

	PM		Samp	le Preparation/A	Analysis	Bala	ance Id:		
			EA Chromium, He	· · · · · · · · · · · · · · · · · · ·	[^] PRIORITY	,	Pipet #:		
Report Due: 01/30)/2003		51 CLIENT: HANF	ORD		Sep1 DT/I	m Tech:		
Batch: 3010358	•	mg/kg				- Sep2 DT/I	m Tech:		
SEQ Batch, Test: None	e					Pre	ep Tech:		
Work Order, Lot, Sample DateTime	Total Amt/Unit	Initial Aliquot Amt/Unit	QC Tracer Prep Date		ish Ppt or Count ize Geometry Time Min	Detector I Id	Count On Off (24hr) Circle	CR Analyst, Init/Date	
Comments:		<u> </u>					· · · · · ·		
All Clients for Ba	tch:								
127642, BECHTE	L HANFORD, INC	•	Bechtel Har	ford, Inc.	, BG2, 27038				
FVM61AA-SAMP Cons	tituent List:								
FVM61AN-MS Consti	tuent List:								
FVM61AQ-MS:									
PRJH1AA-BLK:									
FXJH1AC-LCS:									
	Info:								
FVM61AA-SAMP Calc Uncert Level	(#s).: 2 D	ecay to SaDt: Y	Blk Subt.: N	Sci.Not.: Y	ODRs: B				
FVM61AA-SAMP Calc Uncert Level	(#s).: 2 D nfo:	ecay to SaDt: Y	Blk Subt.: N	Sci.Not.: Y	ODRs: B				
FVM61AA-SAMP Calc Uncert Level FVM61AN-MS Calc I Uncert Level FVM61AQ-MS:	(#s).: 2 D nfo: (#s).: 2 D	ecay to SaDt: Y	Blk Subt.: N	Sci.Not.: Y	ODRs: B				
FVM61AA-SAMP Calc Uncert Level FVM61AN-MS Calc I Uncert Level FVM61AQ-MS: Uncert Level	(#s).: 2 D nfo: (#s).: 2 D	_							
FVM61AA-SAMP Calc Uncert Level FVM61AN-MS Calc I Uncert Level FVM61AQ-MS: Uncert Level FXJH1AA-BLK: Uncert Level	(#s).: 2 D nfo: (#s).: 2 D (#s).: 2 D	ecay to SaDt: Y	Blk Subt.: N	Sci.Not.: Y	ODRs: B				
FVM61AA-SAMP Calc Uncert Level FVM61AN-MS Calc I Uncert Level FVM61AQ-MS: Uncert Level FXJH1AA-BLK:	(#s).: 2 D nfo: (#s).: 2 D (#s).: 2 D	ecay to SaDt: Y	Blk Subt.: N	Sci.Not.: Y	ODRs: B				
FVM61AA-SAMP Calc Uncert Level FVM61AN-MS Calc I Uncert Level FVM61AQ-MS: Uncert Level FXJH1AA-BLK: Uncert Level FXJH1AC-LCS:	(#s).: 2 D nfo: (#s).: 2 D (#s).: 2 D	ecay to SaDt: Y ecay to SaDt: Y ecay to SaDt: Y	Blk Subt.: N Blk Subt.: N Blk Subt.: N	Sci.Not.: Y Sci.Not.: Y Sci.Not.: Y	ODRs: B ODRs: B				
FVM61AA-SAMP Calc Uncert Level FVM61AN-MS Calc I Uncert Level FVM61AQ-MS: Uncert Level FXJH1AA-BLK: Uncert Level FXJH1AC-LCS:	(#s).: 2 D nfo: (#s).: 2 D (#s).: 2 D	ecay to SaDt: Y ecay to SaDt: Y ecay to SaDt: Y	Blk Subt.: N Blk Subt.: N Blk Subt.: N	Sci.Not.: Y Sci.Not.: Y Sci.Not.: Y	ODRs: B ODRs: B				

STL Richland

Key: In - Initial Amt, fi - Final Amt, di - Diluted Amt,

Richland Wa.

r - Reference date, ec-Enrichment Cell, ct-Cocktailed Added

Page 2

WO Cnt: 6

ICOC v4.5.3.2



ANALYTICAL REPORT

PROJECT NO. 100H AREA FULL

B00-030

Lot #: F3A100179 SDG # W03944

Joan Kessner

Bechtel Hanford, Inc. 3190 George Washington Way Richland, WA 99352

SEVERN TRENT LABORATORIES, INC.

MARTI WARD

Project Manager

January 27, 2003





CASE NARRATIVE

Bechtel Hanford Incorporated 3190 George Washington Way Richland, Washington 99352 January 27, 2003

Attention: Joan Kessner

Project Number : 40232
SAF : B00-030
SDG : W03944
Number of Samples : one
Sample Matrix : Soil
Data Deliverable : Summary
Date SDG Closed : January 9, 2003

II. Introduction

On January 10, 2003, one (1) "soil" sample was received by STL--St. Louis for chemical analysis. The sample was received at the St. Louis lab at ambient temperature. Review the COC and CUR forms for variations in sample condition or temperature upon arrival at the lab. See the attached Sample Summary form for the Lab ID's and corresponding Client Ids.

III. Analytical Results/ Methodology

The analytical results for this report are presented by analytical test. Each set of data includes sample identification information, analytical results and the appropriate detection limits. This report is incomplete without the Case Narrative. Results are reported "as received"; i.e. wet weight, unless otherwise noted on the data sheets.

Analyses requested: see attached Method Summary Sheet

Deviation from Request: metals run by 6010B instead of 6010A

IV. Definitions

The following codes are used to denote laboratory quality control samples and can be found in the data summary section of this report:

QCBLK- Quality Control Blank, Method Blank

OCLCS- Quality Control Laboratory Control Sample, Blank Spike

MS- Matrix Spike.

DUP- Matrix Duplicate

MSD- Matrix Spike Duplicate.



Bechtel Hanford Incorporated January 27, 2003

Project Number: 40232

SDG: W03944

Page 2

V. Comments General:

The term "Detection Limit" used in the analytical data reports refers to either the lab's standard reporting limits or contractually required reporting limits, whichever

is applicable.

Please refer to the attached cross-reference table for the standard preparation

methods used at Quanterra, St. Louis.

Metals:

A Laboratory Control Sample, Method Blank, Matrix Spike and Matrix Spike Duplicate were analyzed with each preparation batch per the protocol for this

analysis.

The sample was received with the sample from W03941. Due to a FED EX shipping delay both samples were received on the same day and logged into the same lot. QC was done on the sample from W03941 (J00FK9). Because they were both in the same batch, QC was not done on J00FLO. A copy of the MS/MSD report for

J00FK9 is included in this report. All QC met criteria.

I certify that this Summary is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.

Reviewed and approved:

Marti Ward

St. Louis Project Manager

SAMPLE SUMMARY

F3A100179

WO #	SAMPLE#	CLIENT SAMPLE ID	SAMPLED DATE	SAMP TIME
FFWJX	001	J00FK9	01/07/03	
FFWKN	002	J00FL0	01/08/03	

NOTE (S):

- The analytical results of the samples listed above are presented on the following pages.
- All calculations are performed before rounding to avoid round-off errors in calculated results.
- Results noted as "ND" were not detected at or above the stated limit.
- This report must not be reproduced, except in full, without the written approval of the laboratory.
- Results for the following parameters are never reported on a dry weight basis: color, corrosivity, density, flashpoint, ignitability, layers, odor, paint filter test, pH, porosity pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weight.

METHODS SUMMARY

F3A100179

PARAMET	ER	ANALYTICAL METHOD	PREPARATION METHOD			
Mercury	in Solid Waste (Manual Cold-Vapor)	SW846 7471A	SW846 7471A			
Percent	Moisture	MCAWW 160.3 MOD	MCAWW 160.3 MOD			
Trace I	nductively Coupled Plasma (ICP) Metals	SW846 6010B	SW846 3050B			
Referen	ces:					
MCAWW	"Methods for Chemical Analysis of Water EPA-600/4-79-020, March 1983 and subse					
SW846	"Test Methods for Evaluating Solid Was	te. Physical/Chemi	cal			

Methods", Third Edition, November 1986 and its updates.

													7			10	
Bechtel Hanfo	rd Inc.			AIN OF CUST			LE	ANAL	<u> /SIS</u>				┸-	B00	-030-086	Page 1	ot 1
ollector Nielson/Stankovich		C		y Contact Stankovich	Telephor 531-70						ect Coor N <u>T,</u> SJ	dinator	Price Code 8L		8L		rnaround
roiect Designation 100 F Area - Full Protocol	· · · · · · · · · · · · · · · · · · ·	s	amplin 116-F	g Location					· ·	SAF BOO-			Air	Quality	7 □	21	Days
e Chest No. ERC -9	6-087	F	ield Lo	gbook No.		COA R116	N F1260				od of SI dEx	ipment	1			····	
hipped To Severn Trent Incorporated, #		(5)			30	09	79	,		Bitt	of Ladir	g/Air Bi	li No.	SE	E 05	<u> ک</u> ر	-
POSSIBLE SAMPLE HAZA	RDS/REMARKS			Preservation	None	Cool	<i>'</i>	None	Non	/	None	1					T
Tie To	313 DV:	9		Type of Container	aG	a/	3	P	29	/	P	/					
Special Handling and/or S	Storage		}	No. of Container(s)	l	1		1	1	_	11				1	· -	
			-	Volume	60ml.	60n	nL	1000mL	60m	nt.	2007.		-			 	
W03941	SAMPLE ANA	LYSIS			See item (1) in Special Instructions	Chron Hex -	-	See item (2) In Special Instructions	Stronti 89.90 Sr. Nicke Carbon	Toral el-63	A011/A50	an l					
Sample No.	Matrix *	Sample 1	Date	Sample Time		÷₽.E.		/		#4			- 19	//	i de la compansión de l		
00FK9	SOIL	1.7-3	3	0900	-	•	/	ļ									
BOFLO	SOU	1.1.3					\angle	-							<u> </u>	ļ	
						/						<u> </u>			<u> </u>		ļ
						$\downarrow \nearrow$				_		<u> </u>			 	 	
		<u> </u>			l	<u> </u>								·	<u> </u>	<u> </u>	Moteix 4
CHAIN OF POSSESSIC Impuished By/Removed From STA Impuished By/Removed From	Date/Time Date/Time Date/Time Date/Time Date/Time	Received B	ly/Stored	In Da 728 1.7.3 Da R.F. Is	te/Time te/Time te/Time	0	(1) IC (2) Ga	IAL INSTR P Metals - 601 amma Spectros r sonnet not linquish sam f # 3 B o	OA (Sup copy {C	pertrace Cesium-	137, Coba	t-60, Euro	m, Lead;	3; Mercury - 2, Europium	154, Europiu		Matrix * S=Soil SE=Sediment SO=Solul SI=Sludge W = Water O=Oil A=Arr DS=Drum Solids DL=Drum Liquids T=Transe Wi=Wipe L=Luqued V=Vegetanion X=Chleer
ABORATORY Received B	, 1	1000			Tu	le								1-10		Date/Time	(()
SECTION INAL SAMPLE Disposal M DISPOSITION	ethod	hou						Dispos	ed By				<u></u> -	_ <u>, ,</u> _		Date/Time	

Miles Samples (No. 116-1) Miles Samples (No. 116-1) Section (No. 116-1	Bechtel Hanford Inc.		C	HAIN OF CUST	ODY/S	AMPL	E ANAL	YSIS	REQUEST	`	B00	B00-030-086 Page 1 of 1		of 1 H	
Internal Following Interna	Cullector Nielson/Stankovic	ch									P	rice Code	8L	4	<u>ہ</u>
Sample No. Marrix Sample Date Sample Time Sample Time South Sout	Project Designation 100 F Area - Full										Ai	Air Quality [21 Days \	
OTIME PROPERTY No. A 30 099 Bill of Ladius/Air Bill No. 2 C 05 C Seven Treat in Comparated, Riableand ST LOUIS Preservation No. of Coal of Nome Nome Nome Nome Nome Nome Nome Nome	ice Chest No.	RC-9	6-087	Field EL	_			2600			mest				
Special Handling and/or Storage Type of Coatableer Type of Coata	Shipped To Severn Trent Inco	orporated, Rick	land ST LOUI	Office	e Property No. Ao	30	099	·		Bill of Lading/	Air Bill No.	300	osi	>ر	
Special Handling and/or Storage Type of Contailer No. of Contailer 1	POSSIBLE SAMI Radioactive	PLE HAZARD	S/REMARKS		Preservation	None	Cool 4C	None	Non	e None			•		! !
No. of Constaller(s) Values Serion (1) to Serion (1) to Serion (2) to Serion (3) to						aG.	aG.	P	∌G	P/		 			
Sample No. Matrix * Sample Date Sample Time Section (1) to Counting Section (1) to Section (1) t	Special Handlin	g and/or Stoi	rage		No. of Container(s)	'	1		1	/'					
SAMPLE ANALYSIS Sample No. Matrix * Sample Date Sample Time 100FL0 SOIL 1 C - 3 0845					Volume	60mL	60mL	1000mL	60m	L 20mL					
CITAIN OF POSSESSION Sign/Print Names Specified By/Removed From Date/Time Date/T	W03941		SAMPLE ANAL	.YSIS		Special		6 Special	Sr, Nicke	1-63;					
CITAIN OF POSSESSION Sign/Frial Names Cinquished By/Removed From Date/Time CITAIN OF POSSESSION Sign/Frial Names Cinquished By/Removed From Date/Time CITAIN OF POSSESSION Sign/Frial Names Cinquished By/Removed From Date/Time CITAIN OF POSSESSION Sign/Frial Names Cinquished By/Removed From Date/Time CITAIN OF POSSESSION Sign/Frial Names Date/Time Citain Date/Time Citain Sign/Frial Names Citain Sign/Removed From Date/Time CITAIN OF POSSESSION Sign/Frial Names Date/Time Citain Sign/Removed From Dat	Sample N	ło.	Matrix *	Sample Date	Sample Time			1-7-1	ALC R		***		Je aligerani	MACH THE	* The second
CTIAIN OF POSSESSION Sign/Prist Names Citinquished By/Removed From ATTEMPT AND UK 1 5: 3 Citinquished By/Removed From Date/Time Received By/Stored in JG/PLE By/Removed From JG/PLE By/Removed From JG/PLE By/Removed From Date/Time Received By/Stored in Date/Time Personnel not available to relinquished By/Removed From Date/Time Received By/Stored in Date/Time Received By/Stored in Date/Time Personnel not available to relinquish samples from the 3728 Ref # 38 on 1907 Date/Time Date/T	JOSEKO		Soit	1-7-3											
Colinquished By/Removed From Date/Time Received By/Stored In Date/Time Personnel not available to relinquished By/Removed From Date/Time Received By/Stored In Date/Time Date/Time Received By/Stored In Date/Time Received By/Stored In Date/Time Received By/Stored In Date/Time Personnel not available to relinquished By/Removed From Date/Time Received By/Stored In Date/Time D	JOOFLO		SOIL	1.8-3	0845	-	 	4-	_	+					<u> </u>
Colinquished By/Removed From Date/Time Received By/Stored In Date/Time Colinquished By/Removed From Date/Time Personnel not available to relinquished By/Removed From Date/Time Received By/Stored In Date/Time Personnel not available to relinquished By/Removed From Date/Time Received By/Stored In Date/Time Received By/Stored In Date/Time Personnel not available to relinquished By/Removed From Date/Time Received By/Stored In Date/Time Personnel not available to relinquished By/Removed From Date/Time Received By/Stored In Date/Time Personnel not available to relinquished By/Removed From Date/Time Received By/Stored In Date/Time Personnel not available to relinquished By/Removed From Date/Time Received By/Stored In Date/Time Personnel not available to relinquished By/Removed From Date/Time Personnel not available to relinquished By/Removed From Date/Time Personnel not available to relinquish samples from the 3728 Ref # 3B on 1/9/03 Pole/Time Personnel not available to relinquished By/Removed From Date/Time Personnel not available to relinqu							/_								
Colinquished By/Removed From Date/Time Received By/Stored In Date/Time Colinquished By/Removed From Date/Time Personnel not available to relinquished By/Removed From Date/Time Received By/Stored In Date/Time Personnel not available to relinquished By/Removed From Date/Time Received By/Stored In Date/Time Received By/Stored In Date/Time Personnel not available to relinquished By/Removed From Date/Time Received By/Stored In Date/Time Personnel not available to relinquished By/Removed From Date/Time Received By/Stored In Date/Time Personnel not available to relinquished By/Removed From Date/Time Received By/Stored In Date/Time Personnel not available to relinquished By/Removed From Date/Time Received By/Stored In Date/Time Personnel not available to relinquished By/Removed From Date/Time Personnel not available to relinquished By/Removed From Date/Time Personnel not available to relinquish samples from the 3728 Ref # 3B on 1/9/03 Pole/Time Personnel not available to relinquished By/Removed From Date/Time Personnel not available to relinqu	CHAINORD	000000000		Si - 70-i-	• N	<u> </u>	/	The Property		NG.	<u></u>				Matrix *
clinquished By/Removed From Date/Time Received By/Stored In Date/Time Personnel not available to relinquish samples from the 3728 Ref # 3B on 1/9/07 clinquished By/Removed From Date/Time Received By/Stored In Date/Time Title Date/Time Date/Time Date/Time Disposed By Disposed By Date/Time Disposed By Date/Time	Relinquished By/Remo Relinquished By/Remo REF 3B Relinquished By/Remo SJGALE MJ	oved From Start 0 oved From 19-03 ved From 1903	Date/Time /0 30 Date/Time /0 30	Received By/Sto S J G H L Received By/Sto F E C	red in D. 128-1.8.3. red in D. 5.4.1.9. wed in D. 6.2.1.9. D. 6.2.2.1.9.	1430 ste/Time 03 / 0 ste/Time	(1)	ICP Metals - 60	IOA (Sup	entrace) (Araenic, Cl	nonium, Les D. Europium-	d}; Mercury - 152, Europium	7471 - (CV) -154, Europies	n-65}	5-Sold SE-Soldenset SO-Sold SI-Sludge W = Water O-Old A-Ale DS-Dougn Solde DL-Drum Liquids T-Tissue
L'ABORATORY Received By SECTION Title Title Date/Time Date/Time Date/Time Disposed By Disposed By Date/Time Disposed By Date/Time						nte/Time			relingui	ish samples from	the 3728				V=Vagrtuies
SECTION Chero. 1-10-03 0900 TINAL SAMPLE Disposed Method Disposed By Date/Time	R clinquished By/R emo	rved From	Date/Time	Received By/Sto	wed in De	Me/Time			Ref#_	5.5 on/_S	<u> </u>				
TINAL SAMPLE Disposed Method Disposed By	LABORATORY SECTION	Received By	in Ou	97 D:		Ti	ile				1-	10-0:			
	DINAL SAMPLE DESPOSITION	Disposal Metho						Dispo	sed By					Date/Time	

RCF Numb	RCP	825				Sample Date & Time 11/6/01 122:
Project ID:	116-F-	1	-	SAF Number: Bi	00-029	Date Analyzed 11/12/01 8:04:
Sample ID:	B13D	/9	-			
General Ene	rgy Amal	ynia				
Nuclide	A	ctivity (pCi/g)		Error (pCl/g)	MDC (pCVg)	
Co-60		1.3E+00	+/-	1.6E-01	8.3E-02	11651
Çs-137		1.0E+01	+/-	7.4E-01	8.8E-02	
Bu-152		1.7E+01	4/-	9.4B-01	3.3E-01	•
Eu-154		2.1E+00	₩-	2.9E-01	2.3E-01	
Eu-155	<	2,8E-01			2.8E-01	
Am-241	<	1.7E-01			1.7E-01	•

Total GEA (pCVs	3.0E+01	#/-	2.1E+00	 	
	Activity (pCl/g)		Reror (pCi/g)	 · — — — — — — — — — — — — — — — — — — —	
Gross Alpha**	N/R	+/-	N/R		
Gross Beta	N/R	+/-	N/R		

Definitions:

All errors reported at 2 standard deviations.

N/R = no result or analysis not requested. <MDA = Less than describe limit.

All GBA results reported as "<" Not the Minimum Detectable Concentration (MDC) value for that radionactide.

Rounding serve may need in the reported total CEA scrivity differing from the sum of the > MDA GEA values in the second significant digit.

For saits and natural samples, the following applies:

The analysis of U-238 is based on the activity of Ps-234m. The analysis of Np-237 is based on the activity of Ps-233.

U-23 day is the activity of Fb-214 and Bl-214, short lived daughter products of U-238. Equilibrium between purest and daughter products probably does not exist in distarbed mannisk.

Th-232dau is the activity of As-228, Pb-212, and Tl-208, short fived daughter products of Th-232. Equilibrium between parent and daughter products usey not exist in disturbed malerials.

Other samples, not containing natural meterials, may have imapplicable results for the Th. U. transsentates and daughter products. The results must then be believed for the gross sipin analysis.

"The gross alpha results are not corrected for mass absorbation

No peaks for this radiosectific were visible above background in the rectrum. The result was reported as less than MDC.

Analyst /

C. W. Lander

11/13/01

Report To Mike Stankovich Fex. 521-9001

Joan Kousser

372-9487

Report Printed: Tuesday, November 13, 2001



Condition Upon Receipt Form St. Louis Laboratory

Lot No.: F3A10017	(
W03941	

Client:	Sichel Hanton	4	Dg(e:10-	<u>03</u>	_ Time:O	<u> </u>		
Quote No			Initiated by:_					
Shipper/N	10:792804453160		COC/RFA N	umbers:	D-030	<u>0860</u>		
Condition	n/Variance (Circle "Y" for yes and "N" for no.	If "N" is circ	l e d, see note	s for explana	ation):			
1. (3)	N Sample received in undamaged condition.	5.	N San	nple volume su	fficient for analy	sis.		
2. Y	N Sample received within 4°C ± 2°C*	6.	N Sar	nple received v	with Chain of Cus	stody.		
ŧ	Record temperature: Limbian	<u>+</u> 7.	N Chi	ain of Custody	matches sample	Ds on containers.		
3. Y	N (I/A) Sample received with proper pH**.	8.	(у)и Си	stody seal rece	ived intact and ta	mper evident on cooler.		
4 (?	N Sample received in proper containers.	9.	N Cu	stody seal rece	ived intact and ta	mper evident on bottles.		
* Temperature Variance Does Not Affect the Following Analyses: ** For DOE-AL (Pantex, LANL, Sandia, Timet) sites, remember to pH all containers received, except for VOA, TOX, and soils. Notes:								
Correcti	ve Action:							
		Informed we-k	ally on:		Ву:			
	Client's Name:	Informed verb	-					
	Client's Name:	Informed in w	riing on:		By:			
<u>-</u>	Sample(s) processed "as is".			·				
	Sample(s) on hold until:	$\overline{\Lambda}$		released, notif	y:			
Sample (Control Supervisor (or designate) Review:	SLLL	Tr Do		03			
Project N	Annagement Review:	Mula	Oat	te:	10-03			

SIGNED ORIGINAL MUST BE RETAINED IN THE PROJECT FILE
THIS FORM MUST BE COMPLETED AT THE TIME THE ITEMS ARE BEING CHECKED
IF ANY ITEM IS COMPLETED BY SOMEONE OTHER THAN THE INITIATOR, THEN THAT PERSON IS REQUIRED TO APPLY THEIR
INITIALS AND THE DATE NEXT TO THAT ITEM

METALS

BECHTEL HANFORD, INC.

Client Sample ID: J00FL0

TOTAL Metals

Lot-Sample #: F3A100179-002	Matrix: SOLID
-----------------------------	---------------

Date Sampled...: 01/08/03 Date Received..: 01/09/03

% Moisture....: 13

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION- ANALYSIS DATE	WORK ORDER #
Prep Batch # Mercury	: 3013160 0.035 B	0.038 Dilution Facto	mg/kg r: 1	SW846 7471A MDL 0.0090	01/13/03	PFWKN1AA
Prep Batch #	: 3014119 6.3	1.2 Dilution Facto	mg/kg r: 1	SW846 6010B	01/14-01/15/03	PFWKNLAD
Chromium	25.3	1.2 Dilution Facto	mg/kg r: 1	SW846 6010B	01/14-01/15/03	FFWKNLAC
Lead	5.9 J	0.58 Dilution Facto	mg/kg r:1	SW846 6010B	01/14-01/15/03	FFWKWLAR

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

B Estimated result. Result is less than RL.

J Method blank contamination. The associated method blank contains the target analyte at a reportable level.

METHOD BLANK REPORT

TOTAL Metals

Client Lot #...: F3A100179

Matrix..... SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD		PREPARATION- ANALYSIS DATE	WORK ORDER #
MB Lot-Sample # Mercury	ND	0 Prep Ba 0.033 ilution Facto	mg/kg	013160 SW846 74	71 A	01/13/03	FF0391AA
MB Lot-Sample # Arsenic	ND	9 Prep Ba 1.0	mg/kg	014119 SW846 60)10B	01/14-01/15/03	FF2A51AC
Chromium	ND	1.0 ilution Facto	mg/kg	SW846 60)10B	01/14-01/15/03	FF2A51AA
Lead	0.11 B	0.50 ilution Facto	mg/kg	SW846 60)10B	01/14-01/15/03	FF2A51AD

Calculations are performed before rounding to avoid round-off errors in calculated results.

NOTE(S):

B Estimated result. Result is less than RL.

LABORATORY CONTROL SAMPLE DATA REPORT

TOTAL Metals

Client Lot	#: F3	Matrix:	SOLID				
PARAMETER	SPIKE AMOUNT	MEASUR AMOUNI	:	PERCN RECVE	Y METHOD	PREPARATION- ANALYSIS DATE	WORK ORDER #
LCS Lot-Sam	ple#: F3	A130000-	160 Prep B	atch #	.: 3013160		
Mercury	9.41	8.33	mg/kg Dilution Fact	89 cor: 10	SW846 7471A	01/13/03	FF0391AC
LCS Lot-Sam	ple#: F3	A140000-	119 Prep B	atch #	.: 3014119		
Chromium	82.6	87.4	mg/kg Dilution Fact		SW846 6010B	01/14-01/15/03	FF2A51AF
Arsenic	197	211	mg/kg Dilution Fact		SW846 6010B	01/14-01/15/03	FF2A51AG
Lead	95.0	99.7	mg/kg Dilution Fact	105	SW846 6010B	01/14-01/15/03	FF2A51AH
NOTE (S) :				-			

Calculations are performed before rounding to avoid round-off errors in calculated results.

MATRIX SPIKE SAMPLE DATA REPORT

TOTAL Metals

Client Lot #: F3A100179 Date Sampled: 01/07/03				Matrix: SOLID Date Received.: 01/09/03						
PARAMETE	SAMPLE R AMOUNT		MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOI)	PREPARATION- ANALYSIS DATE	WORK ORDER #
MS Lot-S	ample #:	F3A1001	79-001	Prep Batch	#: 3	01316	0			
						•		% Moi	isture: 5.0	
Mercury	0.015 0.015	0.175 0.175	0.193 0.193 Dilu	mg/kg mg/kg tion Factor: 1	101 101	0.0		7471A 7471A	01/13/03 01/13/03	FFWJX1AH FFWJX1AJ
MS Lot-S	ample #:	F3A1001	79-001	Prep Batch	#: 3	01411	9	% Moi	isture: 5.0	
Arsenic	3.3	210	211	mg/kg	99		SW846	6010B	01/14-01/15/03	FFWJX1AM
	3.3	210	204	mg/kg	95	3.4		6010B	01/14-01/15/03	
			Dilu	tion Factor: 1			-			
Chromium							•			
Chromiun	1 10.8	21.0	33.8	mg/kg	110		SW846	6010B	01/14-01/15/03	FFW.TX1AK
	10.8	21.0	28.2	mg/kg	83	18	SW846		01/14-01/15/03	
			Dilu	tion Factor: 1						
Lead										
near	8.5	52.6	59.0	mg/kg	96		SW846	6010B	01/14-01/15/03	FFWJX1AP
	8.5	52.6	56.1	mg/kg	91	5.0	SW846	6010B	01/14-01/15/03	
			Dilu	tion Pactor: 1			·	•		

Calculations are performed before rounding to avoid round-off errors in calculated results.

Results and reporting limits have been adjusted for dry weight.

Sample Joofk9 from SOG WO3941. Batch QC.